FLIGHT

MAGAZINE

APRIL 1952

35 cents

BELL MODEL 47D HELICOPTER

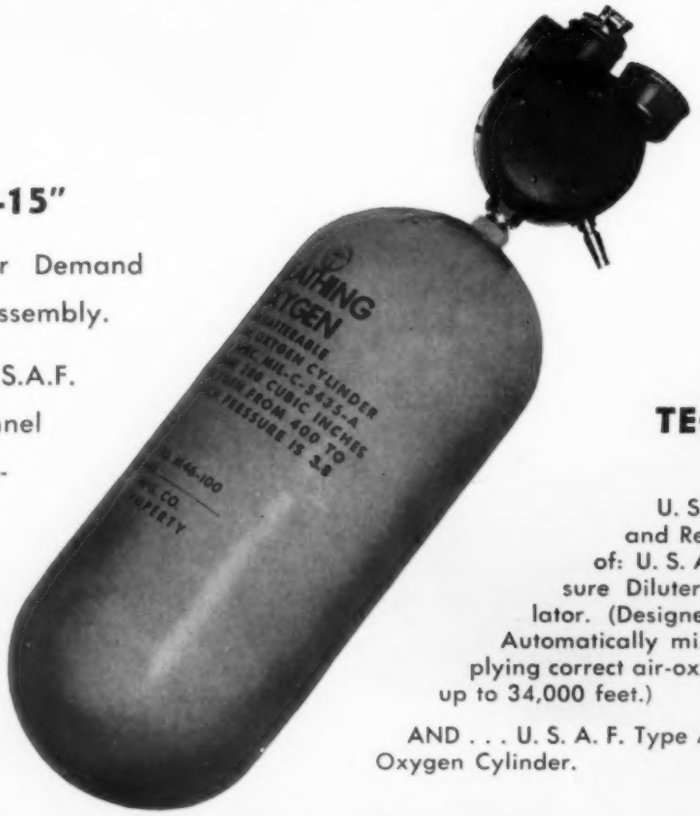
Scott

AIRCRAFT OXYGEN BREATHING EQUIPMENT

THE SCOTT "A-15"

Portable Automatic Diluter Demand Oxygen Walk-Around Assembly.

Standard equipment on U.S.A.F. bombers, cargo and personnel carriers. New units in production and available to airplane manufacturers.



TECHNICAL DESCRIPTION

U. S. A. F. Type A-1 Cylinder and Regulator Assembly consists of: U. S. A. F. Type A-15 Low Pressure Diluter Demand Oxygen Regulator. (Designed and produced by Scott. Automatically mixes air and oxygen, supplying correct air-oxygen ratio for all altitudes up to 34,000 feet.)

AND . . . U. S. A. F. Type A-6 Low Pressure Portable Oxygen Cylinder.

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. . . SCOTT AVIATION is also equipped and approved by U.S.A.F. to process surplus A-15s.

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for Passenger Comfort and Protection as Supplementary Oxygen.

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DUAL-PURPOSE
EQUIPMENT

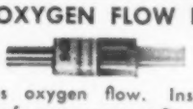
for Crew Protection in Smoke or Fumes. Microphone can be added to mask if desired.

8500 FIXED OXYGEN SYSTEM

FOR ALL AIRCRAFT

"from a Cub to a Connie" providing a complete oxygen system including supplementary oxygen for crew and passengers, demand oxygen for smoke and fume protection for crew. Its regulator (shown above) is the lightest in existence and supplies required oxygen up to 30,000 ft. for up to fifty outlets.

SCOTT OXYGEN FLOW INDICATOR #8540



Indicates oxygen flow. Inserts in tubing of any constant-flow mask (B.L.B., A8B, SCOTT ECONO-MASK, etc.). A flow of approximately 1 L. P. M. causes a red float to disappear. Operates in any position.

Ask for CATALOG #H-33B

FOR FULL DATA AND PRICES ON SCOTT AIRCRAFT OXYGEN EQUIPMENT.

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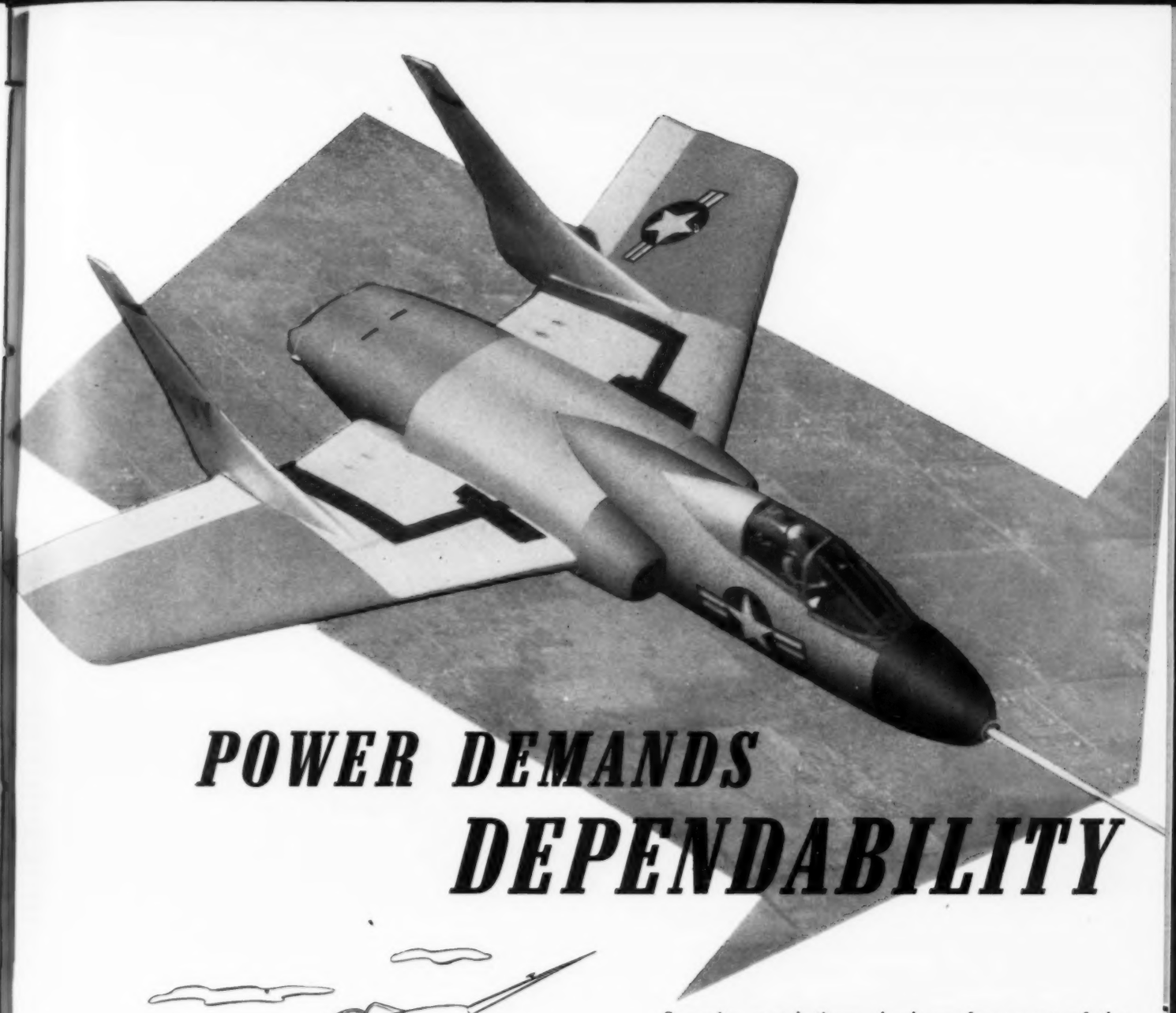

POWER DEMANDS DEPENDABILITY

Security regulations cloak performance of the Chance Vought F7U-3 but it was designed to outfly or out-fight any other carrier-based fighter in the world. This larger, better equipped, harder hitting version of the original F7U-1 Cutlass — first swept-back-wing, tailless fighter to operate from a carrier — incorporates high altitude performance, exceptional maneuverability and greater range and packs a heavier armament punch. This newest of Navy fighters fuels with Mobilgas Jet Fuel.

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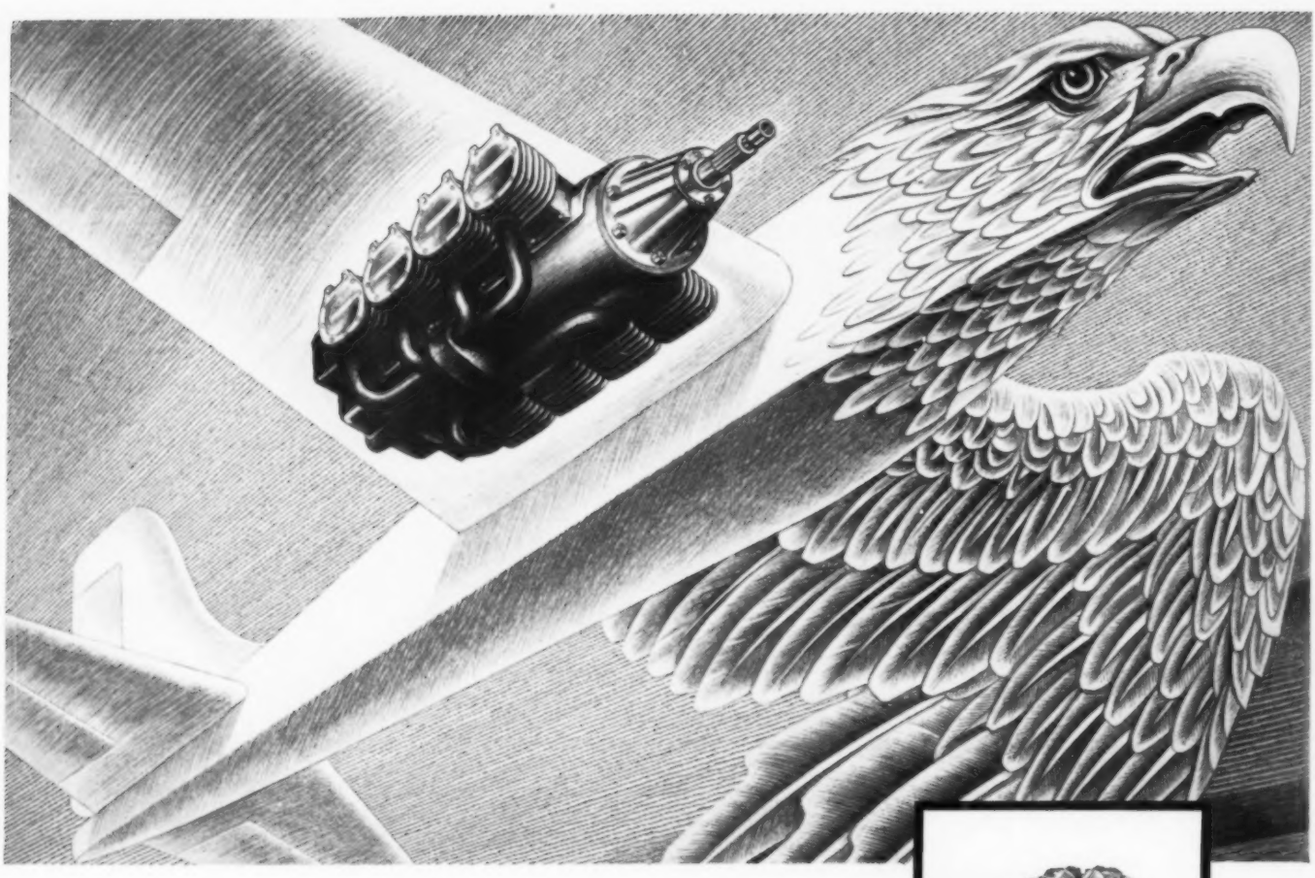
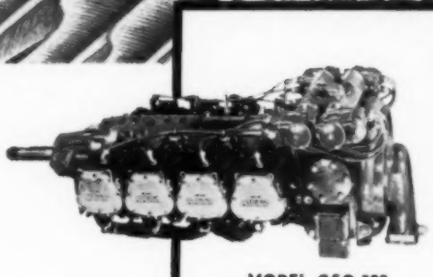


There's a new "beat" in this eagle's heart



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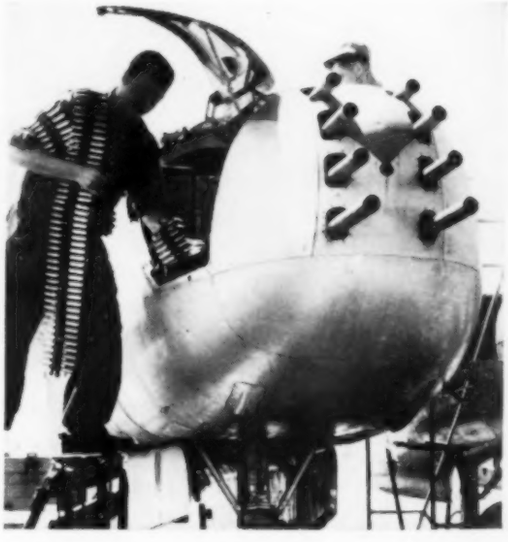
First Machine Gun Fired From a Plane

★

Back on June 7, 1912, Colonel Isaac M. Lewis, the inventor of the Lewis machine gun, took one of his first sample guns to College Park, Maryland, and asked that it be tried from an airplane. The commanding officer of the U. S. Army flying school there, Captain C. de F. Chandler, agreed to undertake the firing experiment himself and went aloft with his pilot, Lt. Roy T. Kirtland, in a Wright Type B plane.



MODERN VERSION! A far cry from Captain Chandler's first machine gun experiment from the air, is this scene at a Far East air base. The U. S. Air Force ground crewman wears a scarf of "ammo" for the powerful .50 caliber machine guns, as he loads up a B-26 light bomber for a mission against the North Korean Communists.

During the unfolding of the great age of aviation, Phillips Petroleum Company has been ever-mindful of the demands for improved, more powerful aviation fuels . . . for any engine is only as good as the fuel that powers it.

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AVIATION PRODUCTS

Airmen's Calendar

April 15-17—CAP Chaplains' Conference, Bolling Air Force Base, Washington, D. C.

April 21-24—National Aeronautic Meeting and Aircraft Engineering Display, Society of Automotive Engineers, Hotel Statler, New York.

April 26-27—Southwestern Regional CAP Conference, Love Field, Dallas.

May 8-9—5th Annual Wisconsin Aeronautics Conference, Green Bay.

May 9-10—National Intercollegiate Air Meet, Stillwater, Okla.

May 15-16—Eighth Annual Forum, American Helicopter Society, Washington Hotel, Washington, D. C.

May 17-18—National Pilots Air Meet and Races, Chattanooga, Tenn.

May 30—Texas Private Flyers Association Annual Convention, Mineral Wells.

June 1-July 15—International Soaring Championships, Madrid, Spain.

June 7-8—Seventh Annual Air Fair, Shawnee, Okla.

June 17-19—First International Aircraft Parts and Equipment Exhibition, Park Sheraton Hotel, New York City.

July 4-9—Sixth Annual All-Woman Transcontinental Air Race, Santa Ana, Calif., to Teterboro, N. J., Sponsored by Ninety-Nines.

Aug. 19-30—19th National Soaring Contests, Grand Prairie, Texas.

NEW PHONETIC ALPHABET for air-to-ground communications has been adopted by ICAO, international aviation governing body, and will be used in U. S. starting next fall. Only one word—Victor for V—was salvaged from the old alphabet which everybody already knew. They're even complicating the language, so now we'll have to learn the following:

A—Alfa	N—Nectar
B—Bravo	O—Oscar
C—Coca	P—Papa
D—Delta	Q—Quebec
E—Echo	R—Romeo
F—Foxtrot	S—Sierra
G—Golf	T—Tango
H—Hotel	U—Union
I—India	V—Victor
J—Juliet	W—Whiskey
K—Kilo	X—Extra
L—Lima	Y—Yankee
M—Metro	Z—Zulu

0—Zero; 1—Wun; 2—Too; 3—Tree; 4—Fow-er; 5—Fife; 6—Six; 7—Seven; 8—Ait; 9—Nin-er; 10—Wun Zero; 100—Wun Zero Zero; 1,000—Thousand.

FIVE AERO COMMANDER DELIVERIES had been made as of last

(Continued on page 34)

500 LEAR AUTOPILOTS have been delivered to date to private plane owners, the 500th unit being delivered last month by Lear Sales Manager Henry Hamm (left) to Bobby Ragsdale, operator of Ragsdale Flying Service, Lear and Cessna distributor at Austin, Texas. Ragsdale has sold 30, 21 of them during 1951. His L-2 sales were about evenly divided between owners of Cessna 190's, Beech Bonanzas, Ryan Navions and Beech Twins.
—(Felder Photo.)

AIR Report
Significant Trends and News

AIRMEN TRAINING LEGISLATION introduced last month in both houses of Congress is direct result of industry-government cooperation (see editorial, page 11). The industry committee which helped frame the legislation estimates the minimum one-year training program should provide 15,000 A & E mechanics, 6,000 pilots (instrument, instructor and/or commercial ratings) plus 1,000 electronics technicians and 1,000 instrument technicians at a cost to the government (standing a maximum of 75 per cent of the cost of training) of about $18 million. It is possible that hearings could be scheduled during April, hence need for immediate support by all concerned.

WATCH FOR PETROLEUM INDUSTRY BLAST refuting CAA's recent release concerning the dangers of leaded aviation gas. Oil companies, which will offer facts and figures to prove that a little lead is not dangerous and should not produce any trouble at all, fear some politicos and manufacturers will use lead to cover up their own errors. Leading is required by government due to shortage of pure aviation gasoline.

FLIGHT MAGAZINE
Including SOUTHERN FLIGHT and MODERN AIRPORTS

APRIL, 1952 VOL. 37, No. 4

COVER: A Bell Model 47D helicopter, leased to the Gulf Oil Company by Petroleum Bell Helicopters, hovers near a Gulf rig in the South Louisiana coastal area. Two of these 'copters were used during the making of a seismic "radial refraction" survey for oil in the Louisiana swamplands.
—(Bell Aircraft Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas

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Airborne
BELLYFUL for HILL 26

What's it take to cut a hill down to surrender-size? Supplies . . . men, guns, drugs, plasma, completely assembled equipment. And getting them there *without fail* is the Fairchild C-119's job. Tough terrain can't baffle these battle-proven "Flying Boxcars." They deliver in a quagmire or a tangled jungle, by parachute or on iron matted runways.

Fairchild designed these rugged aircraft for speed, stamina, versatility. Tribute to Fairchild's engineering skill is that the C-119 "Flying Boxcar" is the number one all-purpose transport for military airlift operations of the U. N. forces in Korea, and for other airlift operations in Europe and the United States.

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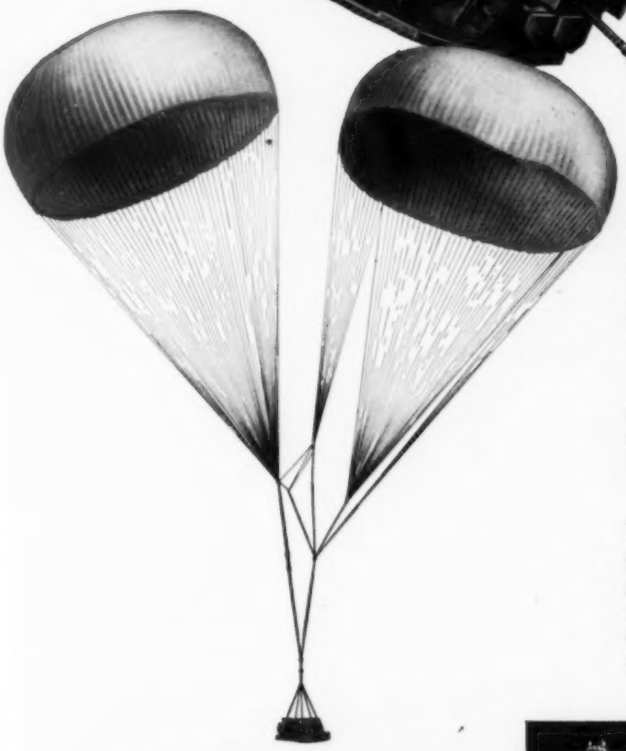

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EDITORIALS

CIVIL AIRMEN TRAINING LEGISLATION AT LAST

BILLS "to aid in meeting the defense mobilization requirements of the United States by providing for the training of civilian aviation personnel" have been introduced in the Senate by Senator Edwin Johnson of Colorado and in the House of Representatives by Carl Hinshaw of California and Lindley Beckworth of Texas.

Both House and Senate versions are virtually the same, although the Senate Bill authorizes an appropriation of $5,000,000 to carry out the Act during the first fiscal year. The House version leaves the amount blank so that it can be determined by hearings in committee. Both Bills authorize the Secretary of Commerce to enter into contracts with public and private training agencies and institutions for the training of aircraft and engine mechanics, aviation instrument and electronics technicians, pilots and other flight and ground personnel, obligating the United States to pay a portion not to exceed 75 per cent of the cost of such training for each trainee. The important point is that a realistic civil airmen training act finally has been introduced in the present Congress and referred to committees on Interstate and Foreign Commerce in both Houses.

The Senate Bill is S2892, the Hinshaw Bill is HR7074 and the Beckworth Bill is HR7073.

Now that the UMT legislation is out of the way, a productive civil airmen training act based on these original bills is within the realm of possibility. The new bills represent the composite effort of industry, government and congressional leaders who recognize the desperate technical manpower situation in aviation and the overwhelming implications of our fast dwindling training facilities on the military effort, which if allowed to continue might well undermine national security.

It's been a tough row to hoe in getting this realistic legislation introduced. But the toughest job is still ahead—pushing it through the present Congress, a job that every individual and agency in aviation must assist in.

The most important thing to remember about this proposed legislation is that it has not been designed to subsidize anyone or even to save the nation's priceless training facilities. Rather, the legislation is being pushed in order to plug a dangerous hole in our air preparedness program. For more than a year the reservoir has been completely dry. And every day the legislation lies in the committees without action is another day of irrevocable loss to American air power. The unfortunate aspect of the situation is that only people close to the true facts of civil aviation's manpower problem and its direct relation to air power build-up recognize the absolute necessity of rapid action.

The legislation will require the backing of the military services, the higher-ups in the Department of Commerce and the manpower authorities. Even with blessings from these quarters the legislation faces the toughest Congress in recent history insofar as appropriation of new funds for new undertakings is concerned. If we can convince Congress of the need strictly on the basis of mobilization, the airmen training legislation has a good chance.

While the military air services actually stand to gain the most benefit from the new proposals, the onus of fighting the legislation through to success falls almost entirely on civil aviation interests, from the airlines on down to the little operator on the smaller airfields of the nation. Success or failure of the legislation will be an index to civil aviation's strength and ability. It will not pass if we leave it up to one or two agencies to carry the brunt of the attack. Everybody has to get into this act.

CAA's BASIC PROBLEM

WE have been brought to task for some of the charges made in our editorial last month entitled "How To Wreck An Organization," although the comment from readers has been overwhelmingly complimentary. High-ranking CAA officials in Washington have told us we are off the beam. We don't think so but stand ready, as always, to give them space for rebuttal.

In brief, we charged that CAA morale in the field has been critically affected by the methods used in reshuffling aviation safety personnel and that CAA effectiveness in the fields of aviation development has been reduced by the proposal to eliminate the handful of airport management consultant service employes and several score air traffic control trainees.

CAA Administrator Charlie Horne vehemently defends all three actions on the following basis:

1. Methods used in reorganization of the office of aviation safety: The reorganization plan, which nearly everybody agrees is all right, called for finding "administrative" types for executive positions in the new set-up and the best accepted modern methods of making these determinations was followed. Scientific testing based on oral and written examinations and interviews accounted for 75 per cent of the grade while 25 per cent was given for experience and background. Hence it was that some of the old-timers who didn't do too well on the tests were reshuffled in the reorganization. "Actually," says Mr. Horne, "very few employes were affected." The tests did not result in any reclassifications as all classifications and ratings are under civil service.

2. Elimination of airport management consultants: The Senate Appro-

(Continued on page 27)

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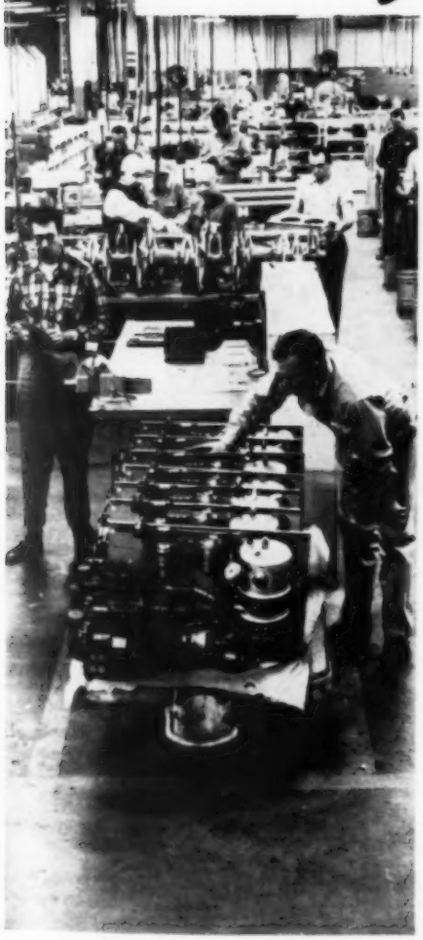

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With the major portion of U. S. Air Force C-54 overhaul activities recently transferred to its new facility at Majors Field, Greenville, Texas, TEMCO is tooling up for even bigger production projects.

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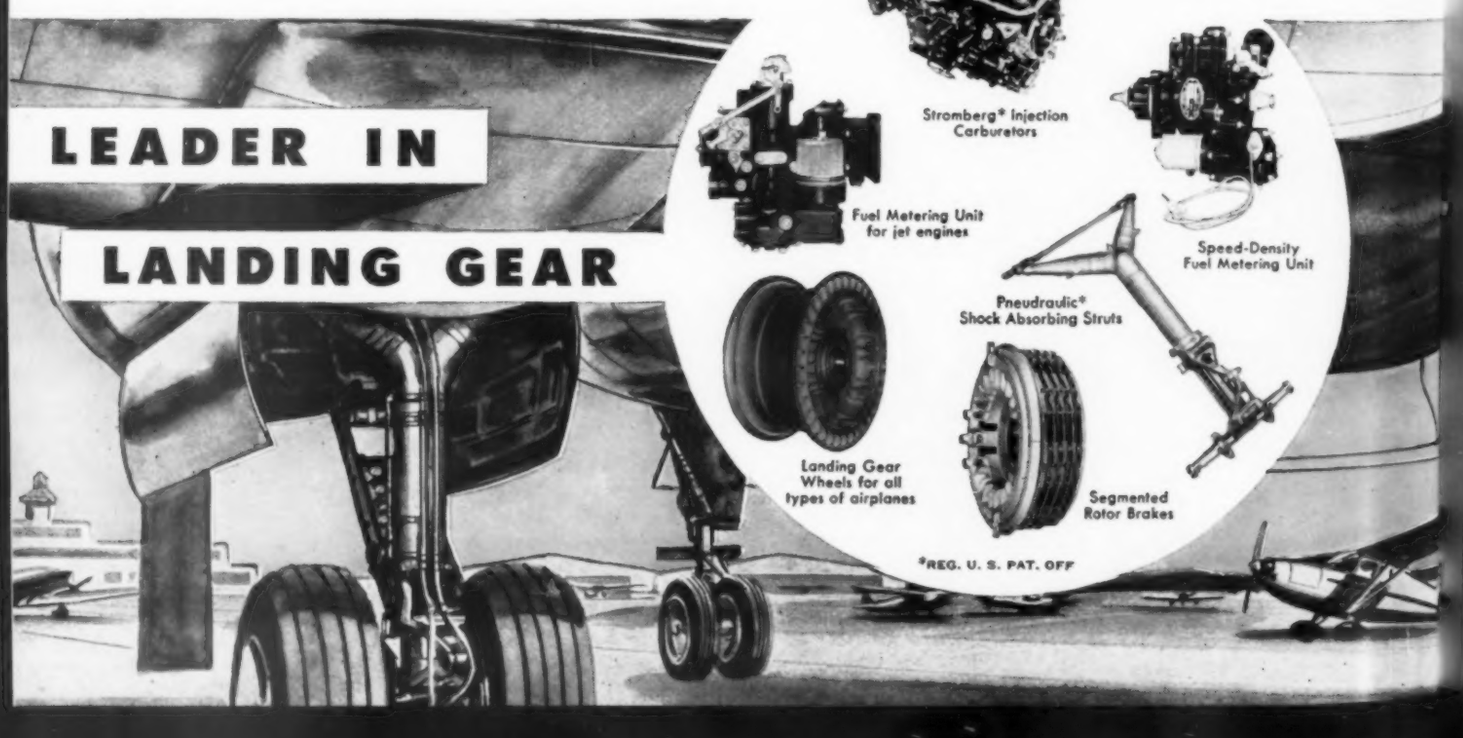
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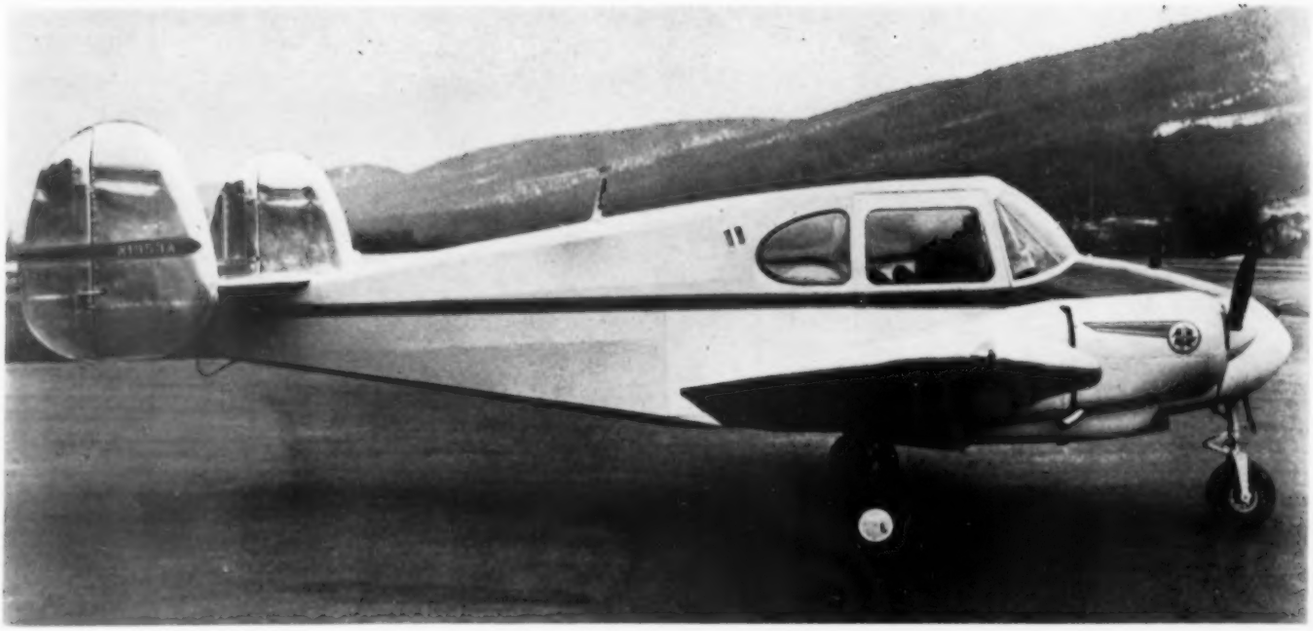
Well worth waiting for—that's what everybody is saying about the new Aero Commander . . . its modern, twin-engine safety and performance . . . its high-utility transport configuration and cabin spaciousness . . . its efficient, always-useful speed-range-load flexibility. Here is air progress at its finest—for air transportation at its best.

Our demonstrator is now available, filling appointments through the Texas-Louisiana territory served by Aero Sales. If it has not yet visited your airport, or if we have not yet scheduled a demonstration for you, we will welcome an opportunity to respond to your inquiry. Contact JOHNNIE K. HAMP, Director; Aero Sales, Municipal Airport, Houston, Texas; Telephones: Milby 6626, Milby 8901, Mission 9-9246.

AERO SALES

Division, Houston Transportation Co., Municipal Airport, Houston, Texas. Tel. Milby 6626-8901, Mission 9-9246

TEXAS AND LOUISIANA DISTRIBUTOR AERO DESIGN Commander



Prototype of new Piper Twin-Stinson began flight tests in March, powered with two 135-hp. Lycoming engines. Cabin seats 4 persons and a spacious cargo compartment is behind rear seat. Piper hopes to hold price of Twin-Stinson to less than $25,000. —(Piper Photo.)

Piper's New Twin-Stinson

An interesting development for moderate-cost twin-engine flying

PIPER Aircraft Corporation, whose distributors sold 1,051 non-military airplanes last year to claim 49.7 per cent of all new civilian lightplane sales in the United States during 1951, is increasing its efforts to dominate the market. It has added six district sales managers to its staff, is doubling its sales promotion advertising, has improved its 4-place Pacer and Tri-Pacer models, is aggressively pushing its heavy-hauling Super Cub for aerial applicator utilization, and has started flight-testing a twin-engine airplane for private owners in the "moderate" price class.

Piper's entry into the twin-engine category offers the fourth light twin to be readied for the market since the war, others being the Aero Commander, Beechcraft Twin-Bonanza and Cessna's forthcoming new twin.

Piper's will be the smallest of the lot, with less than $25,000 as the target price. It is a 4-place, whereas the others are 4-6-place in size. It is now flying with a total of 270 hp., as compared with almost twice that amount in the other three makes.

Called the "Piper Twin-Stinson," the new twin is still in the experimental development stage and Piper has emphasized that deliveries can not be expected before 1953. Only preliminary data has been released pending further flight-testing, which should determine, among other things, how small a twin-engine airplane can be and still offer advantages over single-engine models. The Twin-Stinson prototype is using the same 135-hp. Lycoming engine which powers the 4-place Piper Pacer, which has proved widely popular.

Preliminary Twin-Stinson details released by the factory early in the flight-test program include a 1,250-lb. useful load, a power loading of 12 lbs. per hp., wing loading of 17 lbs. per sq. ft., 72-gal. fuel capacity with a fuel consumption rate of 15 gals. per hr., 58-mph. stalling speed, 150-mph. sea level cruising speed, 1,200-fpm. rate of climb and 21,000-ft. absolute ceiling.

Piper interest in any new design is always encouraging news to civil aviation and the large segment of the industry which uses Piper airplanes. The new twin has created a lot of interest not only in what it will offer when it goes into production but interest in Piper developments which may stem from it later.

The factory expects the Twin-Stinson to represent a long step forward in providing a moderately priced airplane properly equipped to provide around-the-clock air transportation. William T. Piper, president of the organization, said: "We feel that this type of airplane will do a great deal to give the businessman even more utility since it will permit him to complete more of his trips after dark and over weather. This new Piper Twin-Stinson should be a very worthy successor in the long line of Stinson aircraft." It is the first Piper Stinson since the 1949 Station Wagon which was marketed by Piper immediately after it purchased the Stinson Division of Consolidated Vultee Aircraft Corp.

As the accompanying pictures show, the Piper Twin-Stinson has retractable tricycle landing gear and twin vertical fins and rudders. Wheels are said to remain slightly exposed when retracted, this position serving to minimize structural damage in case of a wheels-up landing.

All but the aft section of the fuselage is metal covered, and fuselage

construction is of welded steel.

Chief Engineer Walter Jamouneau and Designer Fred Strickland unveiled the Twin-Stinson to Piper distributors at their recent annual sales meeting at the factory. They emphasized it would be at least 12 months before the twin will have completed its flight tests for airworthiness certification and before tooling is completed for production.

Piper distributors representing every state were at the unveiling. Honors were bestowed on leading distributors for sales records during 1951, with Art Whitaker of Portland, Oregon, as top distributor. Others in the first ten were Baker Aircraft Sales, Long Beach, Calif.; Central States Aircraft, Inc., Ogallala, Nebraska; dePonti Aviation Co., Minneapolis; Gillis Flying Service Billings, Montana; Ken-Mar Air-Park, Wichita, Kansas; Wes-Tex Aircraft, Lubbock, Texas; Brown Flying Service, San Antonio, Texas; B. F. Hines Flying Service, Hobbs, New Mexico, and Safair Flying Service, Inc., Teterboro, N. J.

Another batch of Piper distributors was singled out for having exceeded factory sales quotas. These were led by B. F. Hines of Hobbs, New Mexico, who beat his quota by 310 per cent.

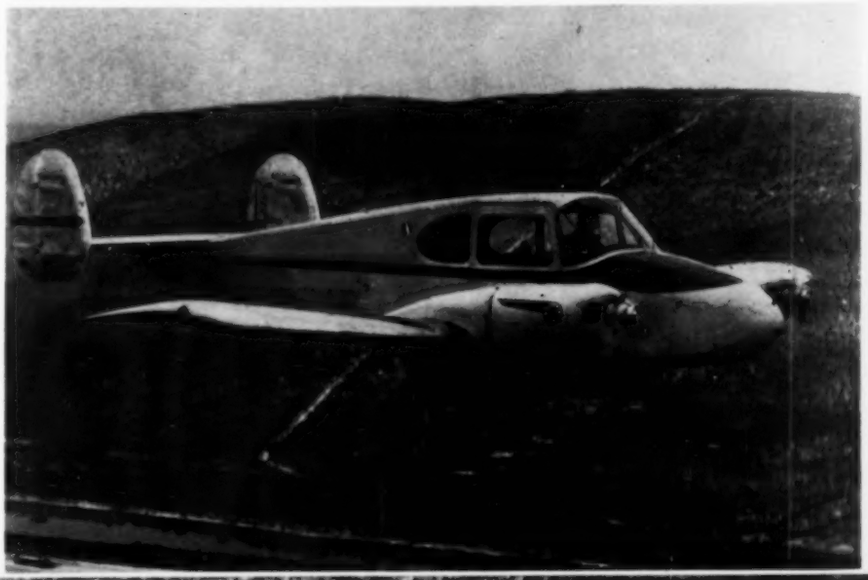
★ ★ ★

PIPER TWIN-STINSON

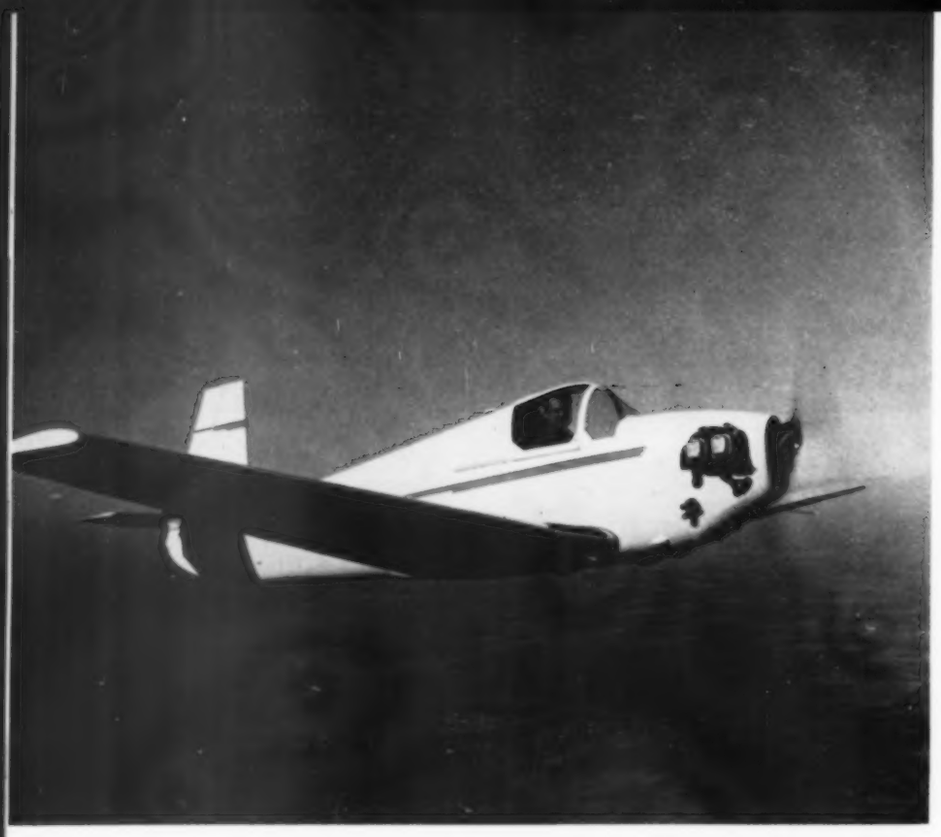
Factory Preliminary Data

Engines, two Lycoming 0-290-D-2 rated at 135 hp. @ 2600 rpm.	
Gross Weight, lbs.	**3200**
Empty Weight, lbs.	**1950**
Useful Load, lbs.	**1250**
Wing Span, ft.	**34**
Wing Area, sq. ft.	**187**
Wing Chord, ins.	**67**
Length, ft.	**23**
Height, ins.	**91**
Prop Diameter, ins.	**74**
Power Loading, lbs./hp.	**12**
Wing Loading, lbs./sq. ft.	**17**
Baggage Capacity, lbs.	**80**
Fuel Capacity, gal.	**72**
***Cruising Speed Sea Level, mph.**	**150**
Stalling Speed, mph.	**58**
Rate of Climb, fpm.	**1200**
Cruising Range, mi.	**720**
Absolute Ceiling, ft.	**21,000**
Fuel Consumption, gals./hr.	**15**

*Data not yet available on cruising speed at optimum altitude.



Twin-Stinson is all-metal except for aft-section of fuselage, which is of fabric-covered, welded-steel construction. —(Piper Photo.)



Object of the author's affection is the little single-seater which can tick off 120 or better on 65 hp. and offers up to 35 or so miles to the gallon of gas with a little coaxing. That's Bill Taylor, factory test pilot and sales manager, under the canopy.
—(Mooney Aircraft Photo.)

Love That Mooney

Tribute to an airplane by a single-seater pilot who enjoys it that way

By FRANK L. HARVEY

I AM a very unconventional guy. Contrary to 10,000 sober opinions of experts, I do *not* think the primary and only purpose of a light airplane is to go places. I think a light airplane is also to have fun in. And by having fun I mean flying it, not to Moose Wallow, Wyoming, for 2-ft. Rainbows, or to Platinum Sands, Florida, for sun-browned babes. I mean just taking the thing up off your own grass field and flying it around and landing it. But before anyone runs off for the Flit gun, let me explain.

I fly a Mooney M-18L.

Many of the people who read FLIGHT MAGAZINE are pilots and should know all about the M-18L. But in case you don't it's a 500-lb. low-wing with a hand-retractable tricycle landing gear and a 65-hp. Lycoming engine. It climbs around 1,300 fpm., has a ceiling of 25,000 feet, scats along at 120 in high cruise, and will deliver up to 35 or 40 miles to the gallon of gas if you're good at coaxing. All this adds up, certainly, to most anyone's idea of an efficient business airplane—but it isn't the reason I'm so sold on the Mooney.

Selling Point

I read an article about the Mooney and the man must have written a stirring piece, because it prodded me into going to Wichita to visit Al Mooney and fly the ship. While there I met a friend of Al's, a local salesman named Ralph Almon. Ralph was the kind of salesman who could make people stand in line to buy acreage in the Dakota badlands for avocado pear farming. He had a neat way of turning phrases. He had flown a lot of airplanes in his time, he said, including a surplus P-38 he bought for pleasure after the war, but none of them did the same thing for him that the Mooney did. "Man," said Ralph, looking at us earnestly, "when you fly this little bugger, you don't feel like a pilot. You feel like a goddam bird."

That's right. That's exactly how you feel.

I like to fly a Mooney so much that I will get out of bed in total darkness when the temperature outside is zero, drive five miles to the airport, wrench the hanger doors out of the ice floes, crank up the Mooney, fly for twenty minutes in the early light, race back home, wolf breakfast and barely swing aboard the rear car of the 8:21 for my office in New York.

I don't know exactly how much gas the plane burns. One time I happened to check it on a flight to Harrisburg and I think I was getting around 28, but I'm not sure. I'm not trying to put the oil companies out of business. I don't really care. I suppose my plane has depreciated considerably since I bought it, but that doesn't bother me either.

There used to be a guy in a flying club I was in, a close friend, too, who always opposed our buying any new airplane on the grounds that you lost so much money due to depreciation.

"Why all you gotta do," my friend said, "is roll an airplane off the factory floor. Poom—you've lost 30 per cent! You can't make any money that way!"

(Continued on page 41)

Mooney's New Model 20

A laminar-flow wing features the newest contender for the four-place market

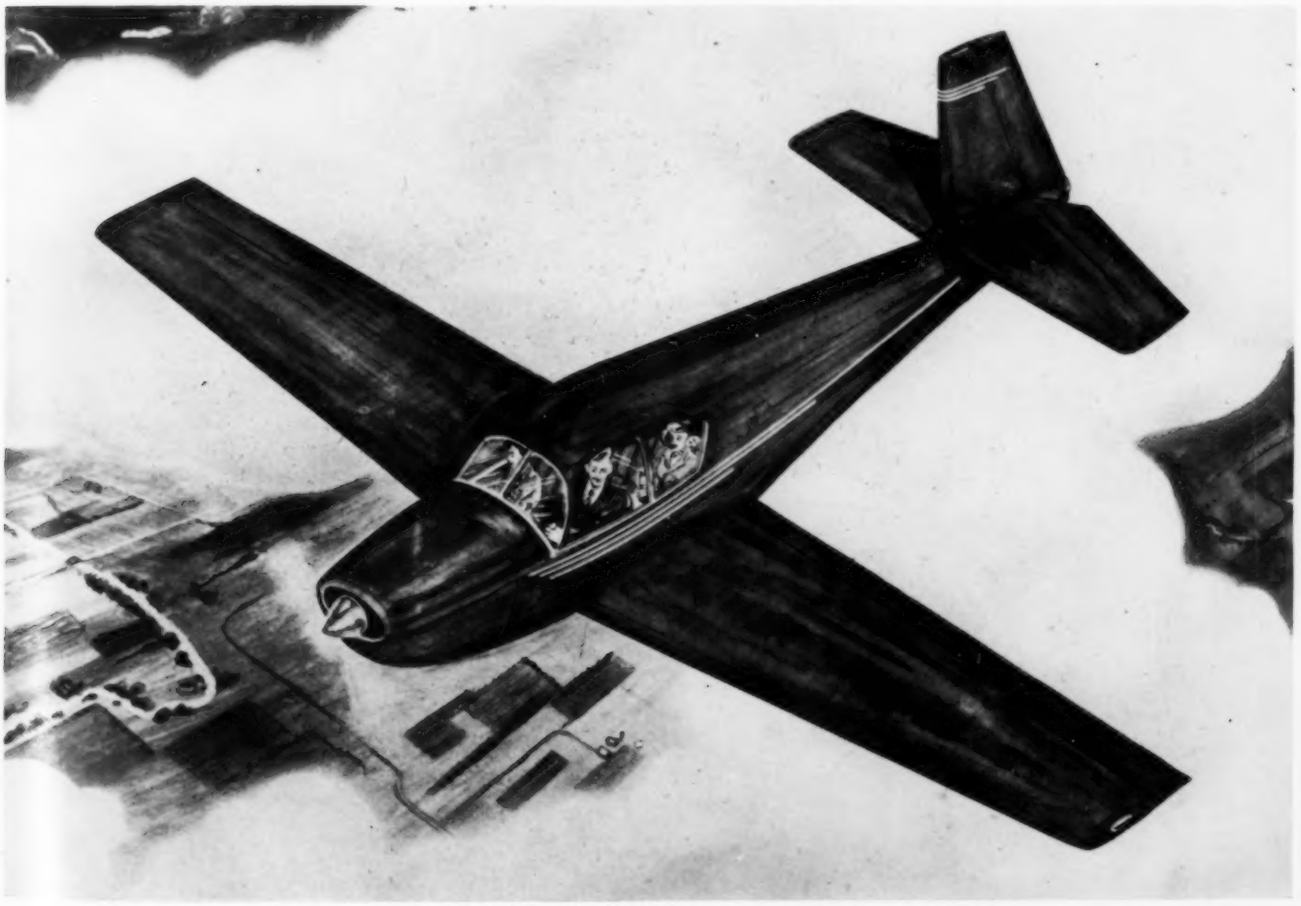
EVER since Al Mooney brought out his little M-18L single-seater, satisfied customers have wondered when he would design a 4-place airplane to match its excellent flying characteristics, simplicity and efficiency. And ever since this question was first put to him, Al has been thinking over design details of just such a 4-place airplane. He has just announced that Mooney Aircraft will enter the 4-place medium-price field, that his 4-place Model 20 will be produced with a possibility of first production models being completed this year, and that the long-awaited Mooney 4-place will beat 160 mph. for cruising speed. To top it off, Mooney released a sketch of the Model 20, as pictured on this page.

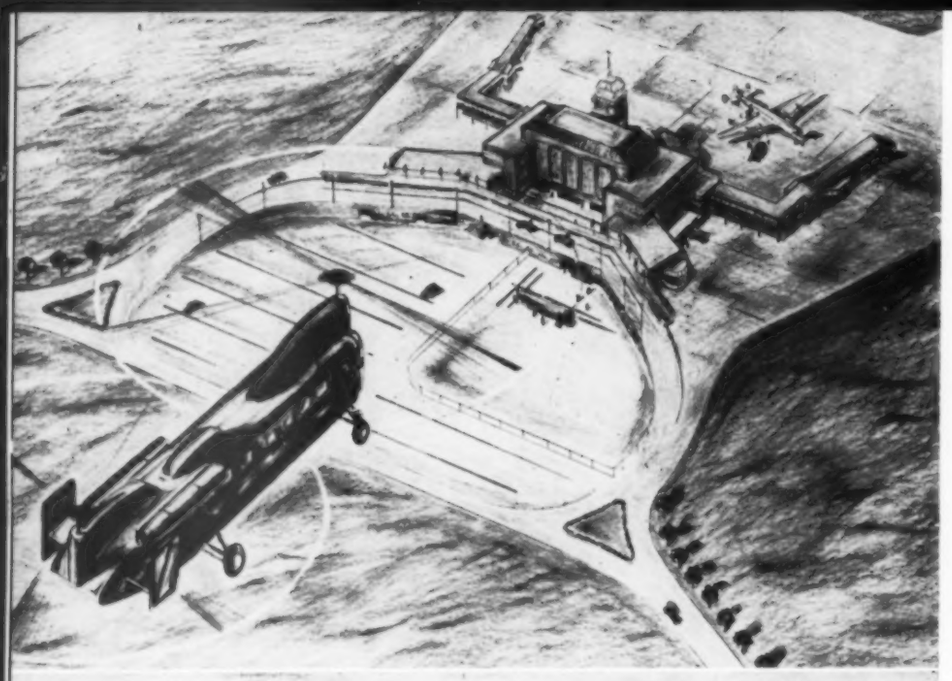
While specific details are being withheld pending the completion of engineering, Al Mooney's many friends know he is aiming at performance in the neighborhood of $15,000 to $20,000 4-place airplanes now flying but intends to obtain this performance with less horsepower and at a much lower cost.

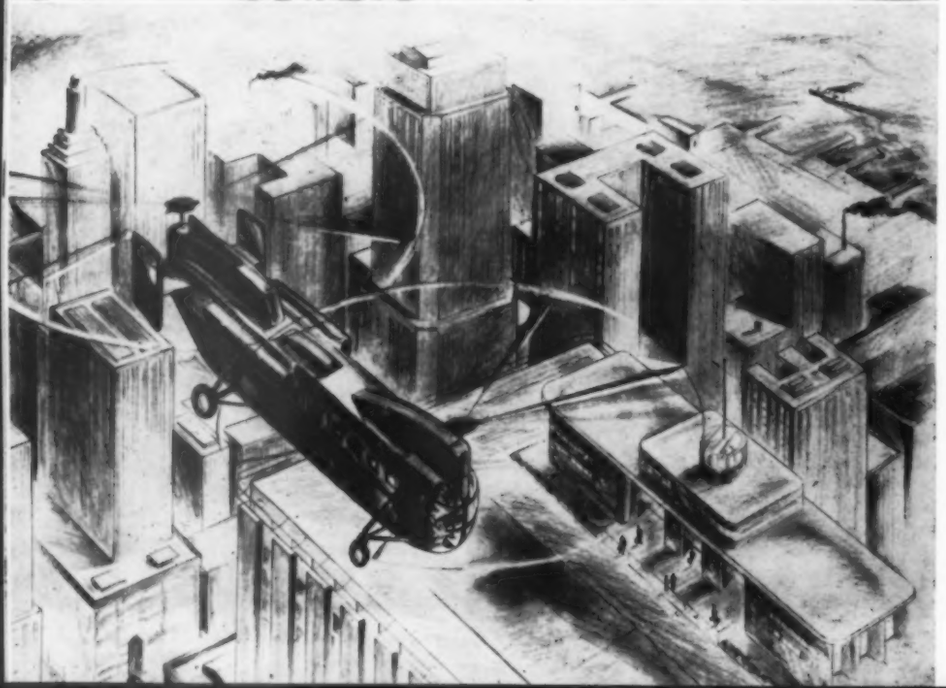
Mooney's philosophy behind his new 4-place design, as expressed to friends, runs something like this: *The aircraft should be as far into the high performance field as technically possible, while remaining in the medium to medium-high price bracket. This means its aerodynamic cleanness must represent a definite advance over existing standards. It must be a full 4-place aircraft, with adequate baggage and equipment allowance with fuel for a 500-mi. normal range. Flight and handling characteristics must duplicate those perfected in the M-18 single-seater design, widely praised for its excellence. Tricycle gear is demanded in the interests of simple and safe ground han-*

(Continued on page 30)

Only details released by Mooney Aircraft with this artist's sketch are that Model 20 will have a cruising speed exceeding 160 mph. and will have a 21,000-ft. ceiling. "It will offer the same safe, friendly flight characteristics and rugged maintenance-free construction now found in the current production Model 18," the Wichita, Kansas, factory commented. "It is expected that the first production models will be delivered by late Fall of this year."







Helicopter Tr

The outlook for short-ha transp

seen by Bell Aircraft following search

By FRANK H. KELLEY
Bell Aircraft Corp., Contracts Department

IN the early days of the helicopter, expansion of its utility came about through application of ideas. Pioneers of rotary-winged flight were willing and anxious to expand the uses of the new craft and they accomplished this end by trial and error.

Each time a new use was presented, the helicopter tested the use and an operating technique was established. From this transition of ideas to practice grew a long list of accomplishments including today's humanitarian activity—that of evacuating our wounded service men from the front lines in Korea.

All of this was accomplished with a basic machine which remained fundamentally unchanged. Operations were planned to utilize the helicopter as it had been conceived and manufactured.

In contrast, today's helicopters are being designed and manufactured to fit specific operations.

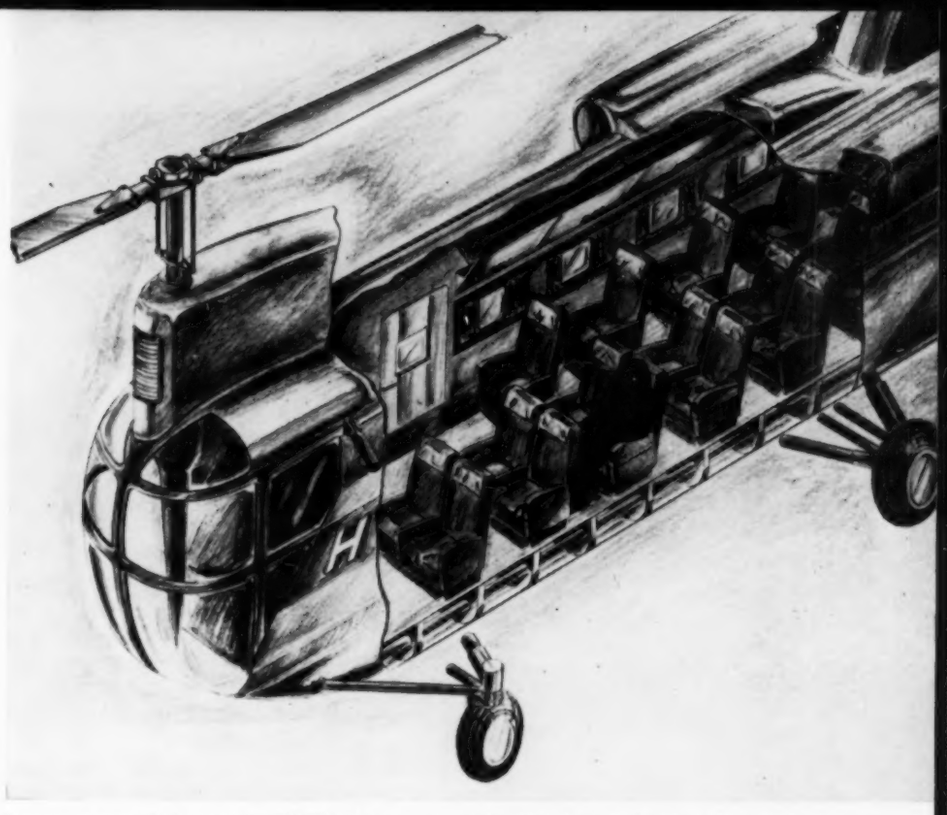
One of these recent specifics involves the use of the helicopter as a passenger and air freight vehicle for short haul operations. The need for this type of operation is becoming more and more necessary due to the increasing difficulties encountered by ground vehicles in opposing traffic.

Metropolitan traffic congestion has

Three types of heliports are sketched at left by Bell Aircraft. Top shows a suggested heliport at the new Fort Worth International Airport, with center sketch showing a dockside heliport and terminal. Operations atop buildings are shown at bottom.

Transport

transportation via helicopter as
searching analysis



Transport-type helicopters will offer large capacity. Here's a Bell Aircraft artist's conception of the interior of a twin-engine helicopter seating 22 passengers.

reduced the average speed of ground transportation to less than 15 miles per hour in many of the nation's cities. This condition, coupled with the need for moving airports farther from populated areas, has paved the way for the transport-type helicopter.

Bell Aircraft Corp. recognized this condition and sent representatives to interview many scheduled airlines, local service airlines, airport limousine operators and government regulations groups. From this comprehensive survey, and by consolidating the specific requirements outlined by the interviewees, the Bell representatives compiled the following specifications for the transport helicopter:

1. Multi-engined (for safety)
2. 20-24 passengers (at 170 lbs. plus 20 lbs. baggage — 190 total)
3. 2,000 lbs. for mail and cargo (at 8 lbs. per cu. ft.)
4. 100-mph. cruising speed minimum
5. 200-mile range (fuel provisions)
6. Pilot and co-pilot
7. Instrument and night flying provisions, including de-icers
8. Rotor blade folding
9. Lavatory
10. Air-conditioning
11. Sound-proofing
12. Readily replaceable passenger seats and component parts without tools
13. 1,000-hour interval between major engine overhaul
14. 100-hour interval between inspections
15. Ease of maintenance

Estimates made by those who have devoted much time to the study of the transport helicopter's role in the air transportation picture show that there is a great untapped potential of air passengers for short-haul flight service.

According to a Civil Aeronautics Administration study, this potential lies in two distinct categories—the first in travel distances of less than 400 miles, and the second in air transportation from airports to the final destination of the air passenger.

Recent passenger traffic surveys conducted by the CAB and the Air Coordinating Committee show that less than six per cent of all airline passengers travel 100 miles or less. On the other hand, more than 90 per cent of all railroad, bus and automobile passengers confine their travels to distances of 100 miles or less. From this comparison, it is logical to expect that the passenger helicopter will eventually find its greatest potential in short-haul inter-city service.

Specifically, it is believed that the large transport helicopter will ultimately be capable of making moderate inroads into the mass short-haul travel market, as well as creating new short-haul business.

It has been estimated that a transport trunkline-type helicopter should have direct flight costs, on the basis of 85-mph. ramp-to-ramp speed, of approximately $1.30 per mile with a utilization of 2,500 hours per year. This amounts to approximately 4½ cents per seat mile, assuming no mail or cargo revenue and 100 per cent load factor.

Taking into consideration ground fare on either end of an airline trip, it would appear that nearly 9 cents per mile could be charged the trunk line helicopter passenger without incurring additional out-of-pocket money to the passenger. The table below illustrates the fare situation.

With the advent of the transport helicopter and the new helicopter air routes, it will be advisable for the airport planners, of large and small municipalities alike, to start thinking about their future heliports. The problem is to give the airport planners preliminary data to help them in their overall heliport thinking. It is not the intent or prerogative of the helicopter manufacturers to lay down heliport requirements. But until such requirements are formalized by regulating

OVERALL COST ANALYSIS

FLIGHT	Air Fare (including tax)	Limousine, Bus, or Cab Fare	Total Cost	Total Mileage (from table)	Overall Cost Per Mile to Passenger
Baltimore-Washington	$ 2.88	$2.05	$ 4.93	51	$0.0966
Chicago-Milwaukee	5.69	2.00	7.69	98.5	.077
New York-Philadelphia	6.73	2.35	9.08	113	.0805
Hartford-New York	6.55	2.25	8.80	123.5	.0712
Detroit-Cleveland	7.48	2.65	10.13	150	.0675
Chicago-Indianapolis	11.50	2.40	13.90	180.75	.0769

Six current Bell helicopters are pictured at left. From top down are XHSL-1 with 1,900-hp. Pratt & Whitney engine; a military version of the commercial 47D-1 with 200-hp. Franklin; XH-15 with 245-hp. supercharged Continental; HTL-4 with 200-hp. Franklin; YH-12B, a 10-passenger model with 600-hp. Pratt & Whitney; and H-13D with 200-hp. Franklin.
—(Bell Aircraft Photos.)

authorities, some basic considerations must be made in heliport planning.

These basic considerations include but are not limited to:

(a) Location of heliport with respect to passenger requirements.
(b) Basic type of heliport, i. e., roof top, surface or water front.
(c) Heliport configuration.
(d) Heliport size.
(e) Flight approaches to heliport.
(f) Heliport facilities.
(g) Other.

Heliports located at the main air terminal convenient to loading and unloading ramps for the large aircarriers, will permit the air traveler to go by air continuously and quickly to his final destination. For example, the airport planners for the new International Airport between Dallas and Fort Worth are currently considering a heliport adjacent to the administration building on the opposite or street side from the airline ramp.

Heliports located within the city limits close to the hub of activity answer one of the most important problems which exists with respect to transportation between airports and the center of activity where the travelers actually originate and terminate their trips. These heliports may be located in cleared surface areas, or on roofs of buildings, or even at docks or piers at the water front.

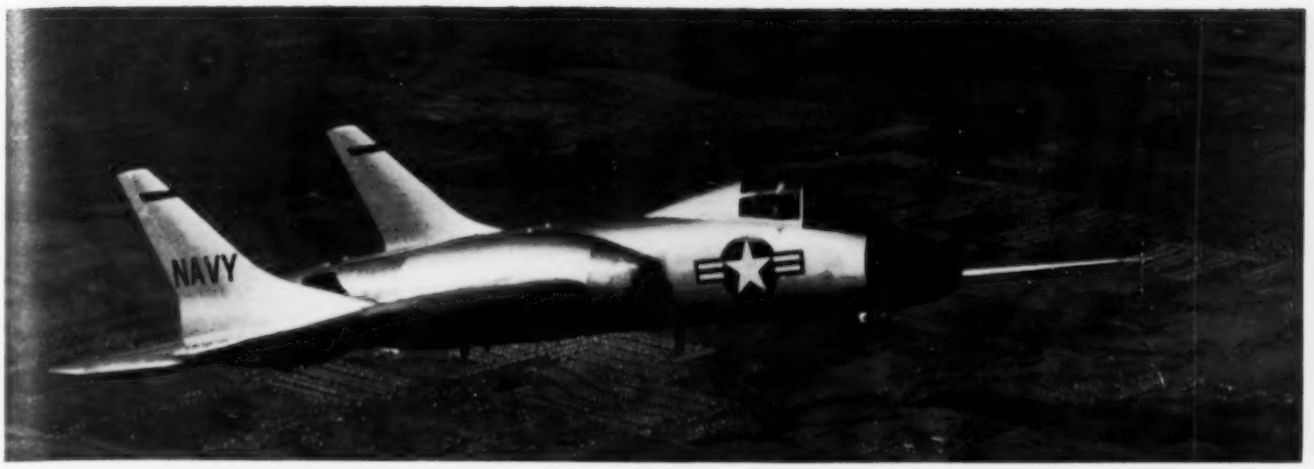
In addition, the suburban heliport must not be overlooked. This type heliport is currently being successfully used for regular air mail helicopter routes and offers considerable promise for passenger travel.

The roof-type heliport is a reality today. The Port of New York Authority has an excellent heliport on top of their Manhattan headquarters on 8th Avenue. This heliport is being used regularly for transportation of key personnel. A modern heliport was recently completed on the roof of the

(Continued on page 40)

Bell Helicopter Activity Now Centered in Texas

Completion of a new $3,000,000 self-contained factory between Dallas and Fort Worth in June will mark the transfer of all Bell Aircraft Corporation helicopter activities from Buffalo, N. Y., to Texas. The new plant is shown above, while a second plant, the former Globe Aircraft factory in Fort Worth now operated by Bell for manufacturing, is shown below. Harvey Gaylord, vice president, has already established his home in Fort Worth and is in charge of the new facilities. More than 2,000 employes will staff the new plant. A feature is the factory's heliport, measuring 200 by 400 ft.—smallest airport in Texas. It is connected to the flight ramp by a 200-ft. taxiway.



Latest version of the Chance Vought Cutlass for Navy carrier operation as an interceptor is this F7U-3. It is heavier and more powerful than the predecessor F7U-1. —(Chance Vought Photo.)

F7U-3 Cutlass

A more formidable Navy Cutlass is being readied for carrier duty

CHANCE Vought Aircraft is now producing a larger, more powerful and considerably advanced version of its Navy Cutlass, first swept-back wing, tailless fighter to operate from a flat-top. The new model is the F7U-3, designed to outfly and out-fight any other carrier-based fighter.

Interest in the Cutlass has increased since the U. S. Air Force has shown some curiosity in it. After several mysterious "explosions" shook Dallas recently, Chance Vought officials revealed the concussions were shock waves striking the earth when USAF pilots had flown a Cutlass, taking turns diving it at very high speeds in separate flights. Evaluation of the Navy fighter by the USAF thus appeared probable.

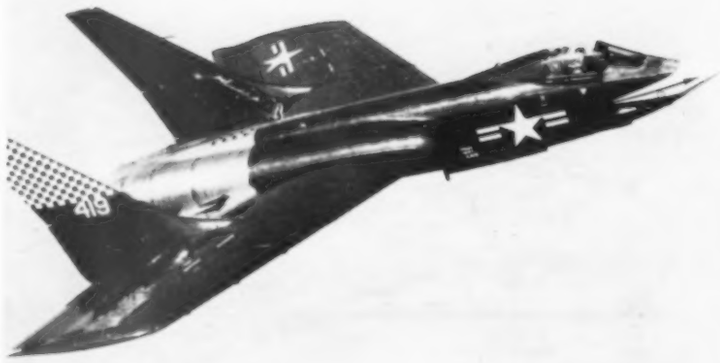
The new F7U-3 is described by Chance Vought as being even more formidable, better-equipped and harder-hitting than its F7U-1 predecessor, with which the Air Force pilots did the fast diving. While no specific details have been released on the "3", it is larger, has greater range and heavier armament, and pictures indicate its engines are larger and far more powerful than the two J-34 Westinghouse jets which powered the "1".

The F7U-3 utilizes a dual power control system, first to be installed in any Navy fighter, to operate control surfaces. Manual controls have been eliminated entirely. Each of the

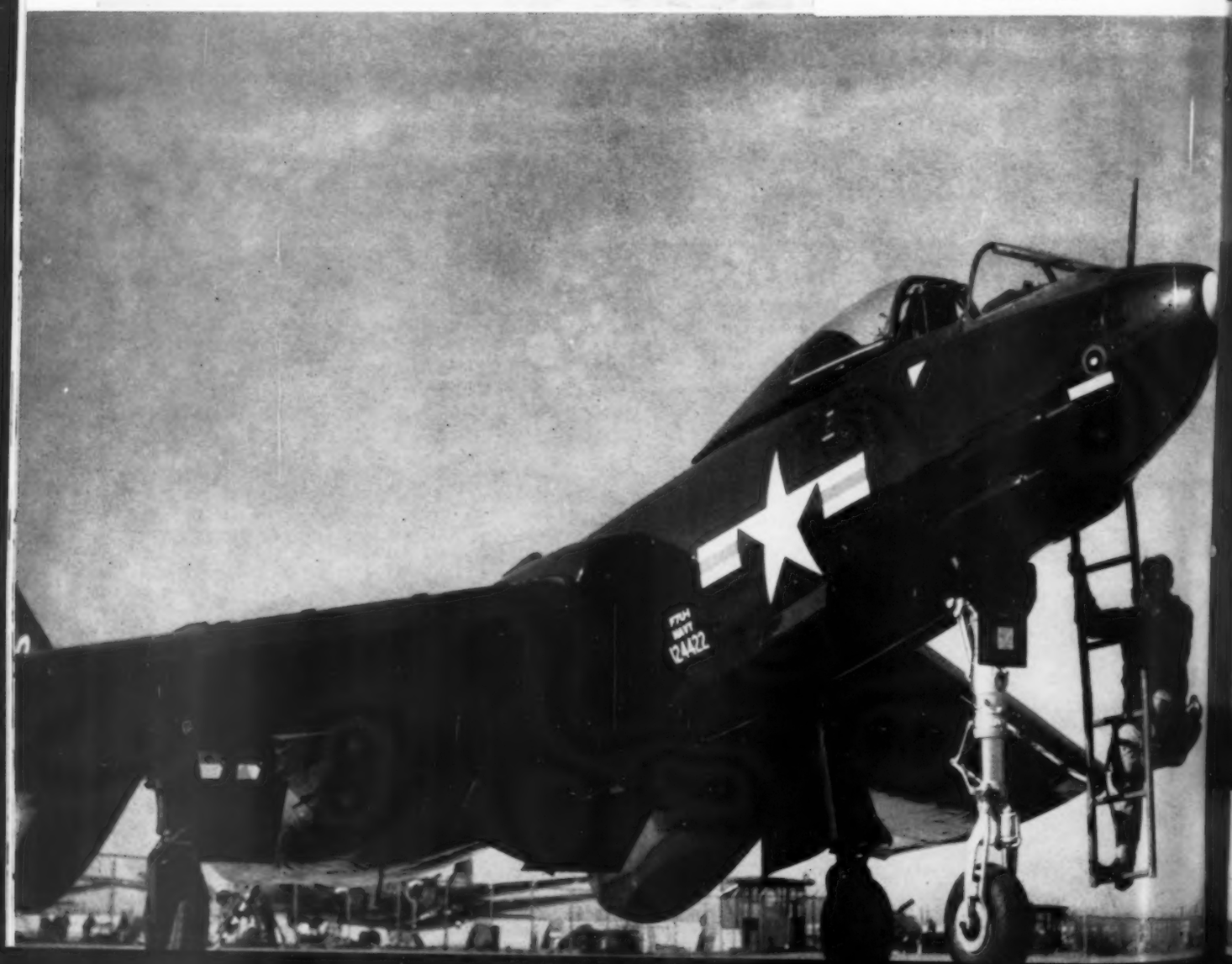
Large air intakes on newest Cutlass appear to house guns in fairing. Nose, which formerly mounted guns, apparently houses radar equipment. Probe is for flight-test instrumentation. Ailevators combining ailerons and elevators differ from those on predecessor F7U-1 (see next two pages for F7U-1 views). —(Chance Vought Photo.)

two power systems is completely independent. New safety equipment is provided, but not identified, and the number of access doors and panels has been increased to more than 100 to reduce servicing time and problems.

The Navy has just cleared some interesting photographs made last year by FLIGHT MAGAZINE, showing some of the earlier F7U-1's interesting features. The pictures are shown on this page and the one opposite. ★ ★ ★



F7U-1 CUTLASS PHOTOS detail for first time Chance Vought Navy interceptor's big speed brakes and dive brakes, pre-rotating nosewheel and other features. Tailless twin-jet Cutlass is in speed class above 650 mph., designed for rapid climb to and extreme maneuverability at altitude. Note size compared with pilot. Protruding atop nose is retractable barrier guard. Vaned nosewheel hub is pre-rotated by air blast from engine (note pipe) at about 80 mph. for landing. Leading-edge "slats" (lift flaps for slow speed) can be seen extended. Speed and dive brakes are also extended (see opposite page). As seen in flight view, twin afterburner is unpainted because of heat.
—(Vought Photo above; FLIGHT MAGAZINE Photo below by E. H. Pickering.)

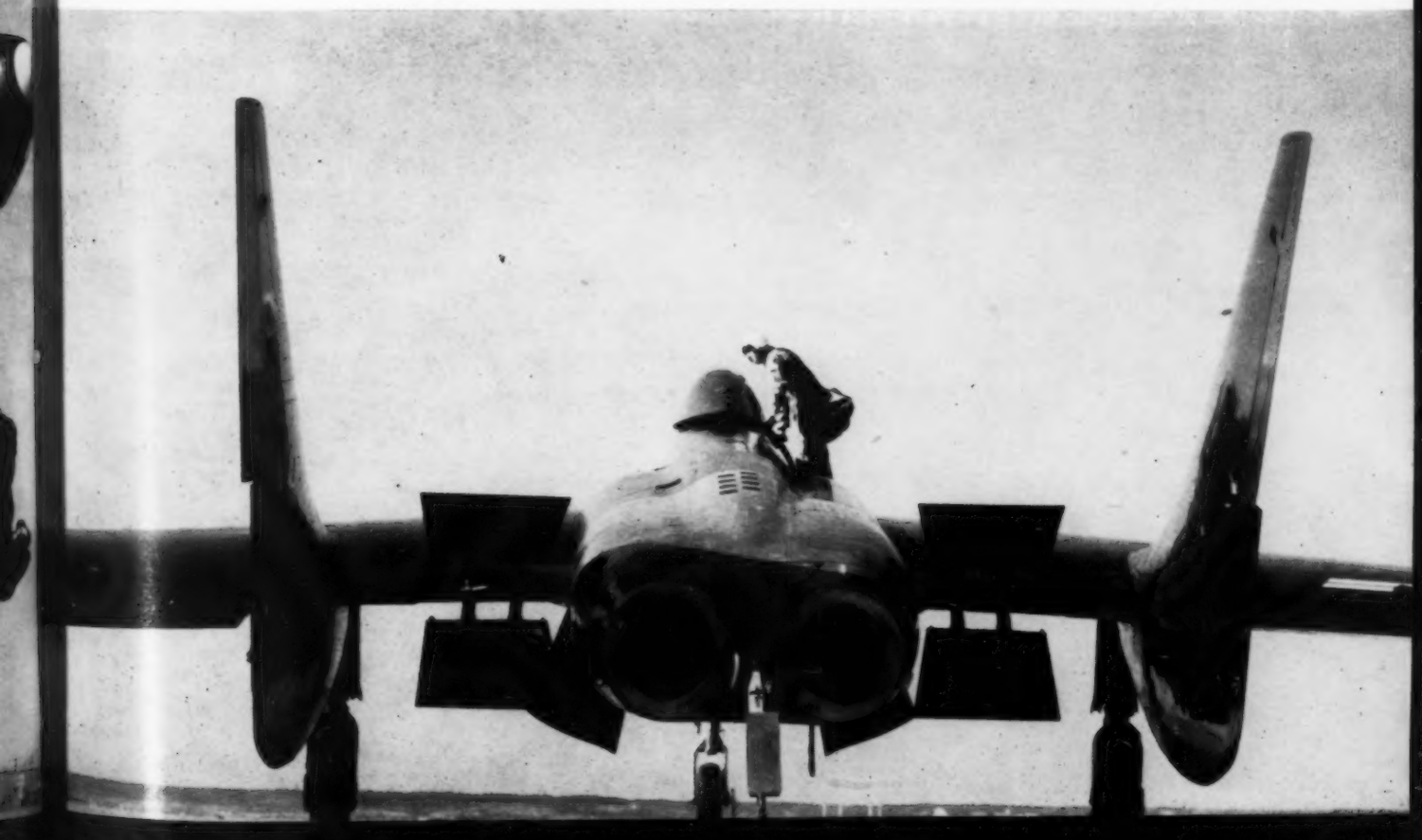


CUTLASS COCKPIT IS PRESSURIZED, maintaining 10,000-ft. pressure at 18,000 ft. Flying at 38,000 ft., cockpit pressure is about 30,000 ft. Span of swept wing is 38 ft. 8 ins. Length is almost 41 ft. "Ailavators" combine ailerons and elevators, and are controlled through an irreversible, powered control system including artificial "feel." Cutlass has automatic pitch dampener and yaw rate-dampener. Wings employ high-speed symmetrical airfoil. These photos show F7U-1.

—(FLIGHT MAGAZINE Photo by E. H. Pickering.)

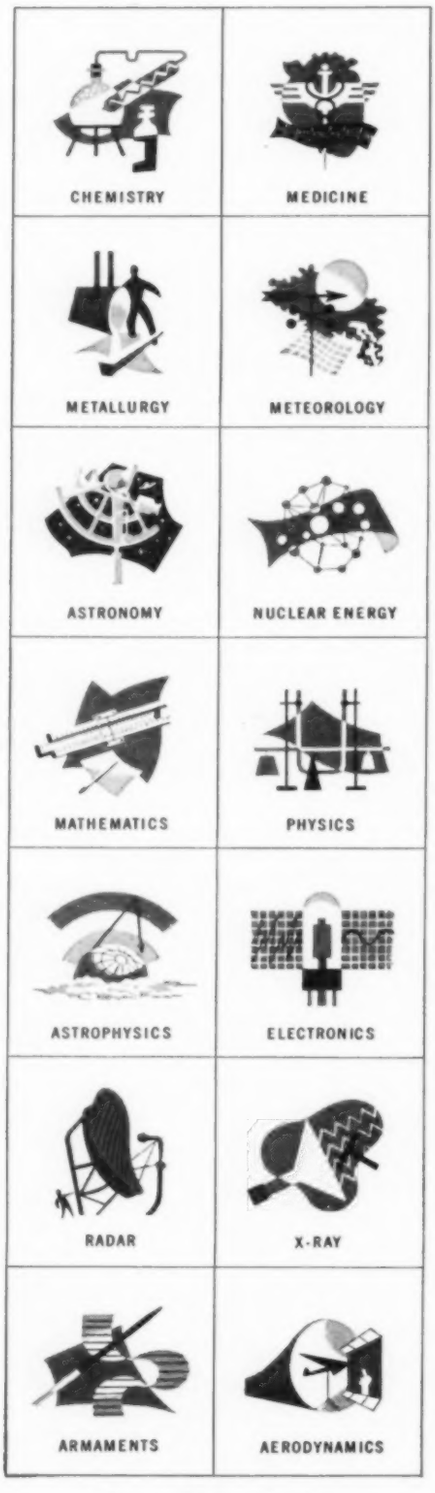
BIG AERODYNAMIC BRAKES FOR WIDE SPEED RANGE are of two types, wing and fuselage. Wing trailing edge clam-shell plates for normal speed control are used with fuselage brakes beneath air intakes for rapid deceleration. Hydraulically operated off same control, clam-shell brakes open first, after which fuselage brakes can be actuated. Leading edge slats are for added lift at low speed. Cutlass hydraulic system also folds wings for carrier storage and operates arrester hook. Engines used in F7U-1 are Westinghouse turbo-jets. Cutlass was designed to span 10 years of anticipated development.

—(FLIGHT MAGAZINE Photo by E. H. Pickering.)



Leadership demands constant achievement

T-33 JET TRAINER
SUPER CONSTELLATION
P2V NEPTUNE
MILITARY CONSTELLATION
F-94 STARFIRE



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For information about Lockheed's on-job training, write: Engineering Section, Employment Dept., Lockheed, Burbank, Calif.

Lockheed
Aircraft Corporation
BURBANK, CALIFORNIA, AND MARIETTA, GEORGIA

Look to Lockheed for Leadership

Lockheed

EXPANDS AIRCRAFT RESEARCH CENTER

As modern aircraft extend beyond sonic speeds and penetrate the outer limits of the atmosphere, new problems of design, materials, power, safety and pilot comfort arise, requiring the kind of scientific research facilities now found at Lockheed.

New buildings, providing laboratories in nearly every known science, have been added to Lockheed's Research Center in Burbank, Calif. Each building was designed for a special purpose. Each contributes to research, testing, invention or design —to help solve any new aircraft need or problem.

Lockheed's new 5-story Engineering Building, for example, houses a streamlined science headquarters, where engineers delve into such subjects as atomic research, pilotless aircraft, jet transports and advanced supersonic fighters.

SCIENCE CENTER

Lockheed advanced blueprints go to work in the new Research Center, which includes an aerodynamics laboratory, testing laboratory, wind tunnel, electronics laboratory, weather laboratory, chemistry laboratory and hydraulics laboratory. Here, meteorologists check the effects of every kind of weather on every vital plane part—shooting Sahara sand into engine bearings, growing tropical fungus on wiring, building Arctic ice on leading edges. These, and hundreds of other scientific tests, result in greater dependability in Lockheed planes.

Another advanced building at Lockheed is the massive Hall of Giants, which contains the nation's largest industrial equipment for building aircraft.

The new designs and methods which are developed almost daily at Lockheed are necessarily classified today. When they can be talked about, they will go down in history along with the many other Lockheed engineering firsts.

JUST AMONG OURSELVES

(Continued from page 11)

priations Committee ordered the CAA to make further cuts in the office of airports budget. Horne was given 24 hours in which to return with the reductions. The Director of the Office of Airports recommended to the Administrator that elimination of the airport management consultants would have the least effect on the defense program and affect the smallest number of people. The Administrator's office consequently accepted this recommendation.

3. Reduction in air traffic control trainees: After cutting every department to the bone it was impossible to avoid cuts in the office of airways, which accounts for about 80 per cent of all CAA employes. It was logical therefore to cut trainees rather than permanent personnel. "We've now reached the point," Mr. Horne states, "where we must resist additional cuts. We've gone as far as we can and I believe everyone of us in CAA is willing to work several days without pay each year instead of accepting additional cuts."

We certainly don't envy Mr. Horne and his staff during the fight for survival of essential CAA functions in the budget hearings. This is an election year and Congress is out to stop Federal waste to satisfy the clamor of the electorate. Mr. Horne and his staff have our sympathy, especially since the aviation industry habitually waits for Congress to "steal the horse" before shutting the gate. However the blame for CAA's annual budget dilemmas is not due to apathy within the industry. The industry simply isn't informed in time to do anything about it. CAA too often has depended entirely on a few "aviation" congressmen to carry the ball. It always has been pretty much of a hit-or-miss proposition. As Mr. Horne points out, the CAA administrator doesn't run the Department of Commerce and like everyone else is constantly under Bureau of Budget and congressional guns. With CAA funds making up the largest percentage of Department of Commerce budgets, it's a case of the tail wagging the dog. Too often Commerce officials don't have the slightest conception of essential CAA functions and needs. Yet the CAA as only one division of Commerce is in the enigmatic position of depending upon Commerce officials to plead their cases.

If CAA officials sincerely want the opinions as well as the support of civil aviation groups on budgetary and organizational problems such opinions and backing are available for the asking. Aviation trade groups are more representative of their particular interests and stronger than ever before in history. Even in crises demanding action within 24 hours can be reached by telephone.

And if CAA officials in Washington don't believe the morale in the field has been seriously affected by the aviation safety reorganization we suggest they go into the field and discover this simple truth for themselves.

It seems to us that the whole problem of CAA-industry cooperation calls for far closer liaison than now exists so that the industry can feel like a true partner in all of CAA's difficult problems, especially in peculiar times like the present. That's why we suggested in our preceding editorial that industry trade groups get together, carefully comb the entire CAA budgetary mess and re-appraise the essential functions of our Federal aviation agency. We think that is the only intelligent, objective and constructive approach to the problem and it's up to CAA leadership to seek out and encourage active industry concern, not for the next fiscal year, but in the long range view of five and ten years hence. The community of interests between civil aviation, the national interest and welfare and the Civil Aeronautics Administration demands something better than the perennial jumping from crisis to crisis everytime a budgetary or organization problem arises in Washington. ★ ★ ★

CESSNA HELICOPTER activities will be directed by Sherman S. Graves, shown at the controls of the Seibel helicopter which Cessna recently acquired along with the company which developed it. Graves, at 38, has been with Cessna over 16 years and is general manager of the firm's new helicopter division. Charles Seibel, president and chief engineer of his company before it was acquired by Cessna, is chief engineer of the Cessna helicopter division. —(Cessna Photo.)

5 reasons why

Beechcraft *Certified Service* is a good investment

1 Only Factory Certified Service Stations are authorized to make Beech-directed modifications. These companies get Beech bulletins promptly and follow them to the letter. They have direct, ready access to all official Beech data.

2 At any one of the BEECHCRAFT CERTIFIED SERVICE STATIONS you will find trained specialists who have devoted their professional lives to the work they enjoy as a skilled craft. Each person has been chosen because of his outstanding professional ability in his particular line of work and trained in Beechcraft methods by the factory.

3 When your Beechcraft requires the replacement of a part, you know the Beechcraft Certified Service Stations will use only factory-authorized parts. And more important, they will avoid the long delay that comes from not having the part in stock. Each of the Certified Service Station maintains a complete stock of parts for your immediate needs.

4 The extensive maintenance facilities available to you at Certified Service Stations are equipped to serve every overhaul and maintenance requirement. Special tools are used for each job, all designed after long-specialized experience in every phase of service and maintenance. These special tools are important to you for they minimize the time required to perform each job.

5 You will find that the efficient line service at all Beechcraft Certified Stations will save you valuable time. Important too, line service here will save you money through preventive maintenance. Each person servicing your airplane makes a check of all visible sources of trouble, calling each to your attention before development into major repairs. This is just one of the many extras you get at any of the Stations listed.

And you'll find intelligent, courteous assistance in filling your needs—the kind of attention you have a right to expect.

When you do business with the firms listed you can be sure your Beechcraft is receiving specialized attention.

Aircraftsmen, Inc.
Will Rogers Field
Oklahoma City, Oklahoma

Alamo Aviation, Inc.
Municipal Airport
San Antonio, Texas

Anderson Air Activities
General Mitchell Field
Milwaukee, Wisc.
Truax Field
Madison, Wisc.

Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey
also
Logan Airport
East Boston, Mass.

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Currey Sanders Aircraft Co., Inc.
Downtown Municipal Airport
Shreveport, La.

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

Harte Flying Service
Municipal Airport
Wichita, Kansas

Hunter Flying Service, Inc.
Hunter Field
Cedar Rapids, Iowa

Ohio Aviation Company
Dayton Municipal Airport
Vandalia, Ohio

J. D. Reed Co., Inc.
Municipal Airport
Houston, Texas

Roscoe Turner Aeronautical Corp.
Municipal Airport
Indianapolis, Ind.

Tradewind Airport Corp.
Tradewind Airport
Amarillo, Texas

Tulsair Distributors, Inc.
Hangar 5, Municipal Airport
Tulsa, Oklahoma

Wings, Incorporated
Wings Field
Ambler, Pennsylvania
Philadelphia International Airport
Philadelphia, Pennsylvania

HELPING AMERICA BUILD FASTER

Truckers and Beechcrafts team up for profits

Company-owned Beechcrafts help keep wheels turning in the trucking and transportation industries. Key men have complete mobility of action. Because their travel time is slashed as much as 75%, they have more time for the home office, more time for field trips, too.

Name *any* American industry — and there you'll find Beechcrafts. Faced with today's double job of building defense production and keeping up the flow of consumer goods, executives find Beechcraft ownership more valuable (and profitable) than ever. Investigate. Call your Beechcraft distributor. Or write Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

FIRST TWIN-BONANZA IN SOUTH AMERICA has been delivered to Geremia Lunardelli, industrialist of Sao Paulo, Brazil. Shown with it above are Beechcraft Service Engineer Robert Gerber and John Savor, ferry pilot for the Beech distributor in Brazil, Companhia Carnasciali Industria e Comercio. They flew it to Brazil, where Gerber began a four-month tour through South America inspecting facilities for Beechcrafts in seven countries. This Twin-Bonanza was the sixth of ten so-called "hand-made" prototypes delivered by Beech preceding assembly-line production.

—(Beech Photo.)

Portable Oxygen Console

Newest portable oxygen unit is the "Aviox," merchandised by Scott Aviation Corp., as a complete oxygen breathing "package" supplying 1 to 4 persons in aircraft operated at altitude. Completely self-contained, with everything in a fine leather luggage case, it weighs only 29 lbs. as a package. CAA weight and balance data are not required since it is portable and involves no installation. In the case with the bottle is a supply of disposable masks, a supply-indicator gauge, a regulator adjustable to changing altitudes, and outlets for four persons.

Relative size of Aviox is shown above. Regulator, outlets and supply gauge are in case with bottle, lines and disposable masks (below).

FOUR-PLACE MOONEY

(Continued from page 19)

dling even in high winds. Useful load distribution should be arranged to eliminate restrictions in loading due to balance and trim requirements.

Mooney bases his prospects of accomplishing his goal on two major points: (1) the use of a low-drag laminar-flow airfoil and (2) a substantial reduction in frontal area. The laminar-flow wing is bound to attract widespread interest. At the time existing high-performance 4-place airplanes were engineered and tooled for production, designers were wary of the use of laminar-flow wings for aircraft in the speed range below 200 mph. Lately, however, low-speed NACA research has resulted in the proof that certain laminar-flow sections are very suitable in this speed range and actually possess stalling characteristics quite superior to some more familiar airfoils. In addition to this NACA research, the champion U. S. sailplane pilot and designer, Dick Johnson, used a laminar-flow wing last summer in Texas for establishing a new world's record distance flight for motorless craft. Interviewed, he said in FLIGHT MAGAZINE at the time that he had obtained excellent low-speed control and handling characteristics from the laminar-flow wing.

Al Mooney's development of his Series 20 four-place should prove to be one of the most interesting civilian aircraft projects since World War II, not only from a standpoint of advanced aerodynamics but because of its prospects of influencing greater utilization of efficient airplanes for private transportation. ★ ★ ★

NEWEST BEECH DISTRIBUTOR is Florida Airmotive, Inc., at Palm Beach County Park Airport. J. E. Craft, president of the new sales and service facility, is shown signing the distributor contract with O. A. Beech, Beechcraft president. Charles Weeks, Jr., is vice president and general manager of Florida Airmotive.

—(Beech Photo.)

More Per Man-Hour

in Beechcraft

Service and Maintenance

● Because Alamo Aviation is headquarters for Beech maintenance, we provide you with a vital backlog of experience. We are geared to Beech service because that's the kind of service to which most of our time and effort is devoted. This "line production" aspect not only means skilled, thorough workmanship, but it also means that no time is lost on the job by "ball-fumbling." It all adds up to better overhauls at less money. And, too, don't forget that Alamo Aviation maintains a readily available supply of new factory parts.

● Alamo Aviation is authorized to make Beech-directed modifications. We receive Beech bulletins promptly, follow them to the letter and have direct, ready access to official Beech data and to Beech experts when help is needed to solve particularly knotty problems.

Routine Service Checks
Complete Airframe Overhaul
Aircraft Conversion
Engine Service
Gulf Products
Storage

Radio: Sales, Installation, Service
Instrument: Exchange, Repair
Continental Distributor
Aircraft Parts
Accessories

● To obtain the best service from your BEECHCRAFT and for prompt attention to maintenance and overhaul requirements, visit Alamo Aviation, San Antonio, Texas. You will find sincere interest in your needs.

ALAMO AVIATION, INC.

Municipal Airport **San Antonio, Texas**

Phone Travis 2643

AUTHORIZED Cessna SERVICE

These progressive Cessna Authorized Service Shops offer flat-rate service.

Aircraft Sales Company
Meacham Field
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Champ's Flying Service
Municipal Airport
El Paso, Texas

Clinch Flying Service
Municipal Airport
North Platte, Nebraska

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
Municipal Airport
Houston—Texas—San Benito

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
Ragle Airpark
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airpark
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

A Hard-Working Team

at your service!

YOUR Authorized Cessna Service Operators listed on this page have just attended Cessna's Annual Service Meeting at the factory. This three-day clinic charted ways and means of continuously improving service methods and efficiency.

Improved service comes from team-work, and on our service team are major suppliers whose products contribute to Cessna performance and dependability. These famous suppliers (pictured below) work hand-in-hand with Cessna, insuring better Cessna service to you.

It's thorough-going team-work like this which enables your Authorized Cessna Service Operator to stand behind every job he performs on your airplane. Ask about our flat-rate service.

Ask Anyone Who has FLOWN it !

Ask how the Cessna 170's High Wing means better visibility and stability... how the patented Landing Gear provides shorter take-offs and safer, smoother rough-field landings... how the 170's service-proved 6-cylinder, 145 H. P. Continental Engine gives you speed, maximum range, economy. Ask, then see and fly this great new Cessna 170 yourself. It's America's biggest-selling 4-place, all-metal plane! Your nearest Cessna dealer will be happy to show you why.

The New Cessna 170

WITH NEW SUPER-LIFT FLAPS

... proved in combat on the famous Cessna L-19 "Bird Dog" Army observation plane—NOW, available to you on the 1952 Cessna 170! These flaps reduce landing speed more than 10%, mean shorter take-offs, slower landings... available only with a Cessna!

CESSNA CASE HISTORIES

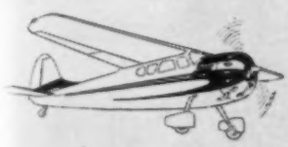
ENGINEER

VERNE SIEMON, ST. CHARLES, ILLINOIS, owns an engineering firm that builds small motors for electronic devices, aircraft, jig saws, etc. He and his wife (she flies, too!) pilot their Cessna 170, 400-500 hours a year; say they use it to commute from home to office, entertain prospects, fly to Air Force bases on government contract business, shuttle out-of-town customers and mail from the airport to Siemon's factory. "Short Cessna hops help 'soften-up' many of my prospects," says Siemon. "They enjoy flying in my 170 as much as I do . . . and it frequently leads to sales," he adds.

TRUCKER

MELFORD A. HOVE, STANHOPE, IOWA, operates a 16-truck freight line that hauls livestock and farm machinery throughout the Midwest. He transports for Sears Roebuck; says he uses his Cessna 170 for service calls to their Bradley, Ill., plant; for calls on six other shippers, to maintain close contact with livestock shipping opportunities in Chicago, solicit new business and visit a favorite fishing hole in Hayward, Wisconsin. The 8-hour auto trip to Chicago, Hove flies in 2½ hours. He reports that he is continually finding new business uses for his Cessna 170, says "a larger plane would cost us too much to own and operate, while a smaller plane wouldn't give us the passenger capacity or stability in the air. That's why we like the 170. It's perfect for our type of operation!"

ALSO SEE THE CESSNA 190 SERIES



Seats 5 with comfort, has powerful airline-type radial engine, 200-lb. luggage capacity, Cessna patented Landing Gear. It's fast, rugged, dependable . . . the leading big-plane value on the market today!

FOR MORE INFORMATION... phone your nearest Cessna dealer or mail this coupon to Cessna Aircraft Company today...

Cessna Aircraft Co., Dept. FM-4, Wichita, Kansas

Please send information on the Cessna 170..... the 190..... I am interested in a Cessna for business.....for farming.....other.....

Name.....

Address.....

City.....County.....State.....

TEXAS STATE AVIATION ASSOCIATION members enjoyed a Rio Grande Valley party given by the Texas Development Company recently. Events included this dinner party across the Mexican border at Joe's Place in Reynosa.

AIR REPORT

(Continued from page 7)

month by the manufacturer, Aero Design & Engineering Co., Inc., Oklahoma City. Aero Sales of Houston, with Johnnie Hamp as director, began touring its Texas-Louisiana territory in its Aero Commander demonstrator early in April.

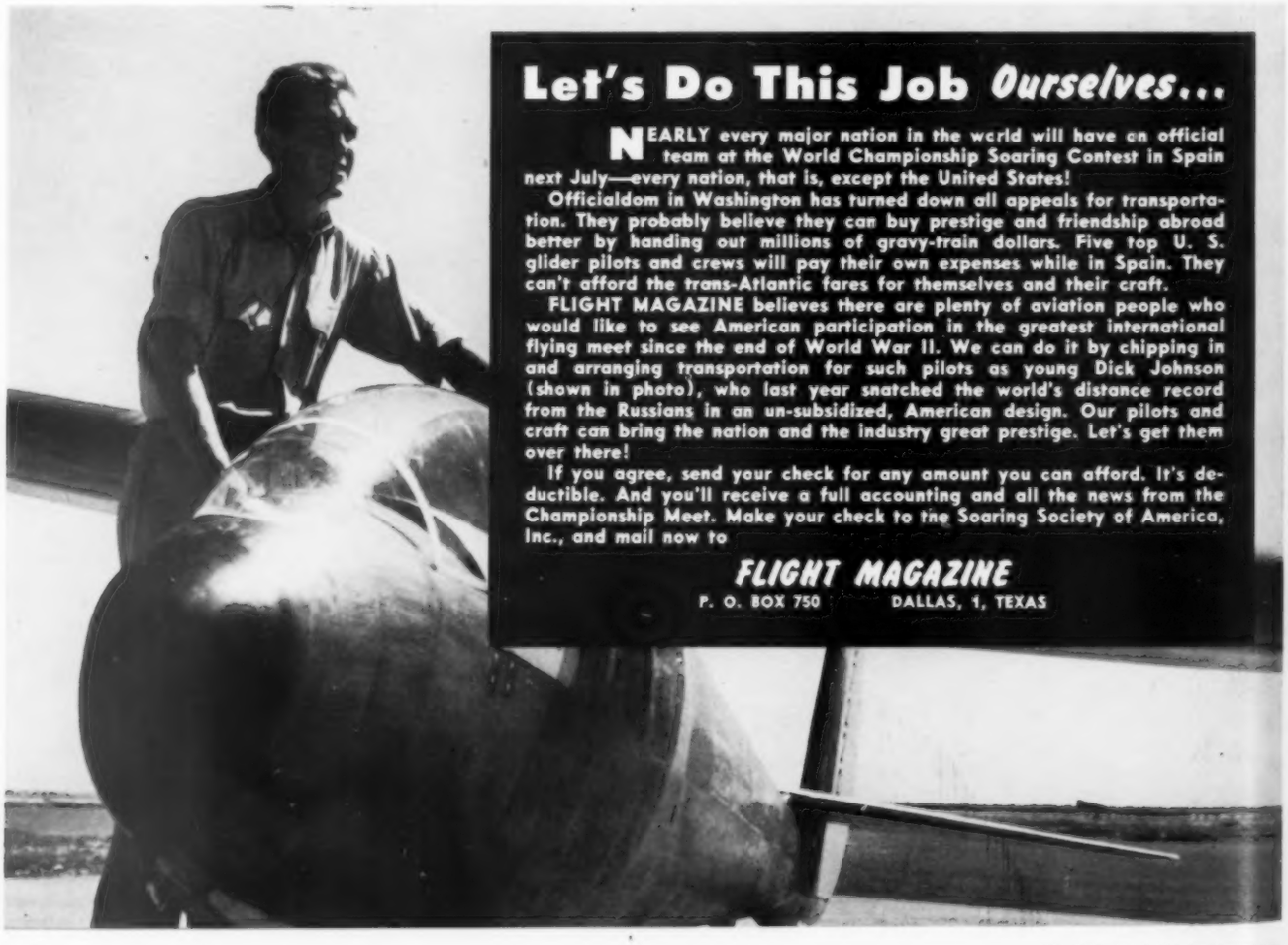
CESSNA MAY ANNOUNCE DETAILS OF ITS NEW LIGHT TWIN next month. It closely resembles Beechcraft Twin-Bonanza in general configuration.

MARTIN AIR TRANSPORTS SEATING 36 PASSENGERS EACH will replace DC-3's operated by Pioneer Air Lines, which is investing some $4,200,000 in nine new-type planes and equipment for them. Temco at Dallas will modify the Martins.

AIRCRAFT SALES COMPANY, Meacham Field, Fort Worth, has purchased the inventory of General Aeronautics, Navion distributors for Texas. Les Bowman and Bill Fate of General Aeronautics have moved to Cody, Wyo., where they have the Aero Commander distributorship and operate big game hunting expeditions for sportsmen.

BOEING'S 200-LB., 175-HP. GAS TURBINE, which has lightplane

BIGGEST FILLING STATION in private aviation at Southwest Airmotive on Love Field in Dallas recently began dispensing Magnolia Petroleum Co. aero products. Looking over the 30-acre concrete ramp, left to right, are SAC Officials Winston Castleberry and Jim Lockart and Magnolia Officials G. L. Tate, Don Bennett, and Ed Keller.



Let's Do This Job *Ourselves...*

NEARLY every major nation in the world will have an official team at the World Championship Soaring Contest in Spain next July—every nation, that is, except the United States!

Officialdom in Washington has turned down all appeals for transportation. They probably believe they can buy prestige and friendship abroad better by handing out millions of gravy-train dollars. Five top U. S. glider pilots and crews will pay their own expenses while in Spain. They can't afford the trans-Atlantic fares for themselves and their craft.

FLIGHT MAGAZINE believes there are plenty of aviation people who would like to see American participation in the greatest international flying meet since the end of World War II. We can do it by chipping in and arranging transportation for such pilots as young Dick Johnson (shown in photo), who last year snatched the world's distance record from the Russians in an un-subsidized, American design. Our pilots and craft can bring the nation and the industry great prestige. Let's get them over there!

If you agree, send your check for any amount you can afford. It's deductible. And you'll receive a full accounting and all the news from the Championship Meet. Make your check to the Soaring Society of America, Inc., and mail now to

FLIGHT MAGAZINE

P. O. BOX 750 DALLAS, 1, TEXAS

possibilities, is now in production at Seattle for the U. S. Navy Bureau of Ships as power generators for minesweepers. . . . **EXTENSION OF OVERHAUL LIFE** of the Gipsy Queen 70-4, which powers the de Havilland Dove, from 600 to 800 hrs. has been approved by the British Air Registration Board.

GENERAL JOSEPH T. McNARNEY, retired, has assumed duties as president of Convair, with Former President LaMotte T. Cohu now serving as vice-chairman.

BOOMING AERIAL APPLICATOR BUSINESS in the Pacific Northwest is reflected by regional CAA figures released by D. R. Nelson of Seattle. He said over 12 million gallons of chemical spray and 11 million lbs. of dust were applied during 1951, covering over 4.4 million acres of crops as well as 895,550 acres of timber. To do the job, 547 planes flew 51,202 hrs., and 428 additional planes flew 34,000 hrs. on fire patrol and other industrial jobs. This activity shows a 50 per cent increase over the previous year. . . . **INSECTICIDE AND FERTILIZER DELIVERIES TO COTTON PLANTERS** are running far behind, says the National Cotton Council. **NEW PRESIDENT OF AIRPORT EXECUTIVES** is Cecil Meadows, Bakersfield, Calif. He succeeds Walter Betsworth, Watertoo, Iowa.

★ ★ ★

LEADING PIPER DISTRIBUTORS HONORED FOR SALES LEADERSHIP are shown above. In top-hatted group are Art Whitaker of Oregon, top man of year (seated between W. T. Piper and his sales manager, J. W. Miller); John Baker, California; Ted Hebert, New Jersey; B. F. Hines, New Mexico; Lloyd Brown, Texas; Roy Neal, Texas; Slim Hallin, Minnesota; Al Gillis, Montana, and Ed Isaacs, Kansas. Quota busters with ball bats include B. F. Hines; Lloyd Brown; Ted Hebert; Art Whitaker; Roy Neal; Al Gillis; Ed Isaacs, all in top ten, and Vernon Strickland, South Carolina; Cliff Plegge, Arkansas; Frank Shelton, Arizona; Harry Combs, Colorado; Ken DeWitt, Maine; Gentry Shuster, Alaska; Cliff Hyde, Texas; and R. V. McNemar, Maryland.

—(Piper Photos.)

The Finest Lodestar—For Sale

All ready to go and in perfect condition.

Latest series Wright 1820-704-C9GC engines have very low time. Fuel 800 gals. Leather upholstery throughout custom cabin, seating 9. Super sound-proofing. Special blower to pre-heat cabin on ground. De-icing equipment includes boots and propeller anti-icers, with special defroster fan.

This Lodestar features outstanding radio installations, with custom panels by Southwest Airmotive. Equipment includes ARC 15-B Omni; ARC T-11 Transmitter; ARC Type 17 Receiver; ARK 18-Channel Transceiver; ART-13 Collins Transmitter; RA-10 Receiver; two ADF's on Dual Head with Rotatable Azimuth; Bendix Isolation Amplifier; Bendix 3-Light Marker Beacon Receiver; Bendix 6-Channel Glide Path.

Everything in first class condition and ready to go, subject to prior sale. Send inquiries to W. C. Powell, 7711 Morton Street, Dallas, Texas; Tel. ELmhurst 4552, RIverside 4141.

Saving Ground Time in Mid-air . . . with the Sperry *Engine Analyzer*

► Now Northwest Airlines saves ground time in mid-air! With the Sperry Engine Analyzer installed on all Northwest Airlines' Stratocruisers, flight engineers can get a continuous visual analysis of each engine's performance *while in flight*. Graph-like patterns on the Analyzer scope locate and identify irregularities in power plant operation.

► Upon landing, flight log information directs maintenance crews immediately to those parts that require servicing . . . avoids prolonged engine running on the ground.

Result: Northwest Stratocruisers spend more time in the air — less time on the ground.

► Sperry's Engine Analyzer is the first complete instrument provided for aircraft to isolate detailed engine difficulties. This instrument pays for itself in a matter of months. Aside from saving ground maintenance time, it also enables the flight engineer to maintain proper operating techniques at all times . . . prevents unnecessary component replacements.

► The Sperry Engine Analyzer reflects this company's many years of experience in the precision manufacture of instruments designed to aid aviation.

SPERRY ENGINE ANALYZER IS MANUFACTURED AND LICENSED UNDER JOHN C. LINDBERG, JR., PAT. NO. 2518427. OTHER U. S. AND FOREIGN PATENTS PENDING.

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GRUMMAN MALLARD

Business is going up!

Busy executives are taking to the air.

More and more of them are flying their own planes or are using company planes to go places faster, more comfortably, entirely free of schedules.

And in more than 600 airports they look to the *Esso Wings* for quality and dependability in aviation products and service.

Many of them also are finding new convenience in the Esso Credit Card, honored from coast to coast.

Esso Aviation Products are chosen by many leading airlines, aircraft and engine builders. Look for the famous *Esso Wings*—sure sign of quality and service!

Esso

AVIATION PRODUCTS

SOLD IN: Maine, N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Penna., Ohio, Del., Md., D. C., Va., W. Va., Ky., N. C., S. C., Ga., Fla., Ala., Miss., Tenn., Ark., La., Texas.

SUPER CUB STRAFER PROTECTS RANCH CATTLE AND DIRECTS ROUND-UP FROM AIR

Everything but the horse itself is carried by Rancher Bob Masterson of Paducah, Texas, in a Piper Super Cub especially equipped for flying cowboy work. Pictures show how the airplane is armed with an automatic shotgun for killing predatory animals and eagles and is equipped with a public address system to direct cow hands on the ground. Shotgun is mounted in the landing gear V, holds 12 rounds and fires below propeller disc. It has proved effective against eagles and coyotes. Speaker is shown installed between wing struts. One is carried under each wing. With these, Rancher Masterson facilitates round-up operations. The Super Cub was delivered to him by Piper Distributor Lloyd Brown of San Antonio. —(Piper Photos.)

Piper models were designed to serve your every purpose and need in business and pleasure.

The outstanding TRI-PACER, PACER and SUPER CUB offer the ultimate in air transportation with low initial cost and economical maintenance requirements.

Piper versatility qualifies every model for any job—on the farm, industry, for aerial application of chemicals and general utility flying.

Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

Arizona
ANDERSON AVIATION COMPANY, INC.
Sky Harbor Airport
Phoenix

Iowa
ELLIOTT FLYING SERVICE
Cram Field
Davenport

DES MOINES FLYING SERVICE
Municipal Airport
Des Moines

Oklahoma
SMYER AIRCRAFT SALES & SERVICE
Municipal Airport
Ponca City

Texas
BROWN FLYING SERVICE
Municipal Airport
San Antonio

PARKER-HUETT AVIATION COMPANY
White Rock Airport
Dallas

Texas
WICHITA FALLS AIR TRANSPORT COMPANY
Municipal Airport
Wichita Falls

A. When it's the fast Cross-Country Pacer or Tri-Pacer

Let's be frank about it. When some people think of Piper they still think about the famous J-3 Piper Cub—loved by hundreds of thousands who learned to fly in it, but never famous for speed, range or comfort.

The only points of similarity are flying ease, rugged construction and dependability which are built into all Pipers from the experience of manufacturing more than 35,000 planes over more than two decades. Otherwise, the Pacer and Tri-Pacer are in an entirely different class. In fact, in a class by themselves. For no other four-passenger airplane gives you such solid cross-country performance with such satisfactory economy.

Here's what you get in the 1952 Pacer and Tri-Pacer: SPEED – better than 120 mph. (134 mph cruise with controllable prop for Model 135). RANGE – better than 575 miles. CLIMB – ample to enjoy the pleasure and economy of upper-air flight. COMFORT – sound-proofing, adjustable front seats, plenty of room. ECONOMY – far lower operating costs than any other four-place airplane.

We all love the Cub. But it's a cousin far removed from the new Pacers. Lots of people know that, too. More of them bought Pacers and Tri-Pacers in 1951 than any other four-place airplane. Let your Piper dealer demonstrate this remarkable airplane. For his name and free colorful brochure write Dept. 4-F.

PIPER AIRCRAFT CORPORATION
LOCK HAVEN, PENNSYLVANIA

You'll Like These Advanced Pacer Features

TRICYCLE GEAR. The Tri-Pacer is even easier to fly than the Cub. It virtually lands by itself. Interconnected controls permit flying with wheel alone. Tri-Pacer costs less than half the price of any other 4-place business plane with tricycle gear. Ideal in high winds.

NEW WIDE GEAR. Standard Pacer gear is 12 inches wider on '52 models for fine, stable handling characteristics on ground. Hydrasorb landing gear smooths out even the roughest fields. New bubble windshield for added speed, strength and visibility is one of many other fine new features.

FOR UTILITY THE SUPER CUB AND PA-18-A

The new 1952 125 hp Super Cub with high-lift flaps takes off and lands in less than 50 yards, holds the world altitude record of 30,203 feet. It's a plane of hundreds of uses for farm, ranch, patrol, freight carrying, exploration, landing in remote areas.

New agricultural version, model PA-18-A, has 110 gal. (18 cu. ft.) capacity as duster, sprayer or combination unit. Outperforms aircraft of twice the power, lays 50-foot swath, lands closer to jobs for quicker loading. Wire cutters, shoulder straps, many other special features. Write for special PA-18-A brochure.

Introducing

BREEZE MARK

BELLMETS*

*Metallic **BELLOWS** with Mechanical, Electrical, and Thermal Properties

Inside diameters joined by special bonding and insulating agent.*
Outside diameters welded by special process.
Contour resists specified pressures, with safety factor.

*Insulated band can be provided on either inside or outside diameters, depending on direction of pressure. On type BELLMET illustrated, pressure from within supports tight band.

Here is BELLMET construction

BELLMETS are metallic diaphragm bellows with electrically insulated convolutions. In addition, they will withstand internal or external pressures exceeding 500 P.S.I., temperatures up to 500°.

They can be designed in almost any size for almost any degree of flexibility.

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Their wide range of application is indicated below, but the field has scarcely been explored. Perhaps BELLMETS can solve or simplify *your* design problem.

and two typical applications . .

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what can You do with BELLMETS?

HELICOPTER TRANSPORT

(Continued from page 20)

Los Angeles Post Office Annex and helicopters make 22 regular stops there each day in shuttling mail. A similar heliport on the roof of the 12-story Chicago Post Office Building is used for 38 flights per day between this downtown building and the Chicago Municipal Airport. It is not too early for municipal planning of strategically located roof tops to be designed and constructed with a view towards future helicopter use. Future modern buildings of any consequence could have a heliport constructed as part of its roof structure. Large downtown automobile parking buildings, bus terminals and other similar structures may well be adapted to terminal facilities for helicopters.

Generally, individual analysis of a building roof may be needed because of variations in roof support spacing and strength. Current roof designs usually account only for snow and wind loadings. However, architects will have to become familiar with the dynamic phenomenon associated with helicopter landings. For a first approximation, it may be advisable for these designers to estimate roof-strength requirements based on helicopter landing gear design load criteria which are specified by the CAA.

The possibilities of a heliport located in a cleared surface area should not be overlooked. The surface heliport should have adequate approaches. Although the actual landing area may be of "postage stamp" size, a steep or vertical obstructed approach to the surface heliport should be eliminated. Thus, selection of surface heliports requires careful consideration of the approach area.

The helicopter can be easily equipped with a combination float-skid type landing gear permitting amphibious operation. Many larger cities have water fronts close to the center of town which might easily be utilized for heliport operation. A small dock, barge or pier offers an economical platform with clear approaches. For example, the New York Police operate their helicopters from several of the Manhattan piers.

The physical specifications of the heliport are a matter of consideration for each particular installation in its effort to give rapid and convenient service. To date all heliports have been basically landing areas only, while in the future, heliport configuration must be designed to include passenger terminals, automobile parking facilities, helicopter servicing facilities, and operational offices. ★ ★ ★

LOVE THAT MOONEY

(Continued from page 18)

The treasurer of the club spoke up. "John," he said, "are you by any chance a member of this club for the purpose of making money? Because if you are, let me read last year's financial report. Believe me, we are not making money. As a matter of fact I do not see much hope for a profit this year or next year either."

Outflying the Fly Boys

I can't go into flying for any reason in the world other than I like it. If you like flying the way I like it you can have more fun in an airplane than in any other type of machine made by man. Take the Sunday afternoon about a month ago when I was circling around in my Mooney at 10,000 feet, enjoying the view of the New York skyline and practicing a few wingovers. Suddenly something big howled past me so close it tossed the Mooney up on a wing and scared me so badly I almost jerked the throttle off its hinges. It was a Marine Corsair, a Weekend Warrior out having himself a time. The F4U went down toward the earth in a screamer of a dive, pulled straight up, rose into the blue like a rocket and rolled out on top. I saw the little black shape of the inverted gullwing passing over me, 5,000 feet above, on a reverse course. I laid my head back and followed him. He wasn't through with me. He was going to make another pass.

I quickly wound back Al's Safe-trim device, which gives you flaps and trims your tail at the same time, reduced speed to about 70, and watched this joker over my shoulder. He jockeyed into position for a high-side run, dumped the nose and came smoking down. I mean, he was really winding. I waited until he got in the pursuit curve and was almost in range. Then I turned abruptly toward him. The Mooney came around on a dime. But the U was game. He tried to hold me. He kept pulling it. He got up in a vertical. He got almost over on his back. Then he got sucked away from me by centrifugal force, five miles away, still pulling it, still trying to get his sights on the Mooney. If that boy's vision didn't at least get a little gray, he was wearing a G suit.

"Nuts to you, Jack!" I yelled at him, in pure happiness. I wouldn't trade that one for a barrel of 2-foot Rainbows!

Confession

Most people like to show off, but few will admit it. I admit it. Rack up the balls, hand me a cue, I'll break

PLACE: *Anywhere, U.S.A.,*

TIME: *Right Now!*

Time was when a scene like this would have created quite a stir around an airport, but that was before the non-transport plane had proved it could earn its keep. Today, of course, such sights are common from coast to coast. Hundreds of corporate owners maintain one or more craft of this type for the routine use of executives and key personnel, because they find it pays off in higher efficiency, saving priceless time, cutting overall travel costs. High among the factors responsible for the trend is the performance of the engine which powers so many of these business aircraft. Product of specialized experience dating from 1902, Continental is far and away the first choice for utility planes—first choice for *any* use where *dependability* counts.

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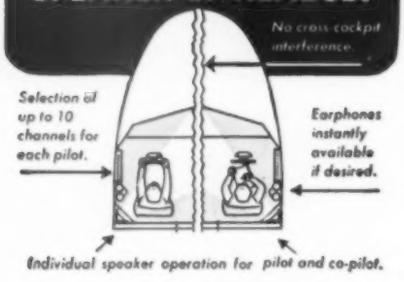
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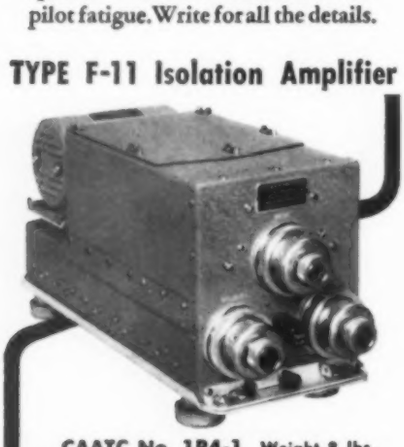

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them. I don't go in for flat-hatting because it's against the law, but you can show off in a Mooney just by flying it normally, taking no chances, and have the blessing of the most conservative CAA inspector. Bill Taylor, Al Mooney's test pilot and sales manager, put on a little show for me out in Wichita. The usual 40-mile wind was keening across the Kansas flats and I said to Bill, "Better wait, hadn't we?"

He said, "We have a little saying out here. We use a ball and chain down in the southern part of the state, where the wind really gets brisk, instead of a wind sock. If the ball and chain is standing out straight we know it's all right to fly. But if the ball comes off and the links start snapping away, then we put the planes in the hangar."

He taxied the Mooney to the downwind side of the field, firewalled the throttle, and went upstairs like an elevator. He stalled it cold at 500 feet. It hung there. The test figures say it will lose 40 feet in a full power stall. But to me it seemed to *gain* altitude, due to the wind. Bill took it on up to 1,000 feet and stalled it again. Then he turned toward us, down wind, and dropped it in like a strafing fighter. In silhouette it looked like an F-51, which it has been mistaken for many times, in the air. Bill screamed past at 180, ground speed, laid it into a

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vertical, cut the power and dumped his flaps. He brought the airplane up beside us, with the hatch open and hung there, scarcely moving, waving and smiling. Then he dropped it on and stopped in about 75 feet. The wind did a lot to make this show possible, I know, but I said to myself somewhere during the performance, "Harvey, that's your plane."

Do you like to fly high?

In the Mooney you can fly high without grinding around in circles for half a day. I never timed myself, but I read some place that you can go to 10,000 from the deck in 12 minutes. The highest I've ever been is 13,000 feet on a blue-and-crystal day over Morristown, New Jersey. Down below me the Cubs in the traffic pattern looked like moths fluttering on a brown quilt. I could see Manhattan to the East and the silver rim of the Atlantic rising beyond Long Island. I got above the haze line and it was *clean* up there. Do you know what I mean? How can you worry about the payments on the TV set, what your boss said about the Tompkins account, or the fact that your wife is holding lamb chops for dinner when you look up into that incredibly clear delicate blue sky? If you persist in muddling over lamb chops at a time like that, brother, hand in your wings. You're through.

At 13,000 feet over Morristown I did not expect to encounter anything bigger than a bot fly. It gave me quite a jolt, therefore, when I glanced through the starboard side of my canopy and saw a Lockheed Constellation there, sharp and glistening in the sunglare, and people waving at me through those bullseye windows. I don't know. I guess I'm a little bit romantic at times, but things like that appeal to me, and I do not care how many cubic centimeters of 80 octane gasoline it required to lift me up there beside the Connie.

I feel that Al Mooney, who designed the joy of my life, is a friend of mine. I know Al is plugging—and selling—his little single-seater for business purposes, and it's no fault of his if satisfied customers like me write it up in terms of romantics. The Mooney *is* a swell business plane. I don't know of any other that will get you there any faster for the same money. If you weigh 215 pounds, like I do, and stand 6 feet 3 inches in the shoes, you'll have to squeeze a little to get in. But it isn't so bad, really, once you are in. You certainly won't fall out. And your visibility is terrific. Like Ralph Almon said, you feel like a bird. I've got no kicks. I'm with it.

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Questions and Answers for Airport Operators

Handy File for Leases

QUESTION: I wonder if some other airport manager can tell me how he keeps track of all the leases and agreements on his airport. Our airport has over 50 of these and it is pretty hard to keep them all in my memory. I have thought of using the card system to bring out the salient points of such agreements and leases, but before doing this I would like to know how others do it.

ANSWER: Your problem seems primarily to require that you get a copy of all leases and agreements first. I see no reason why a card record then should not be set up for quick reference.

You might be interested in a method we saw that seemed to have a lot of advantages. This covered the leases and agreements on an airport which had publicly-owned buildings, privately-owned buildings and facilities and some Government-owned facilities. The airport manager had prepared loose leaf binders for his own files, the city manager's files and those of the director of public works who was responsible for the airport division. In each of these binders covering leases, contracts and agreements, the setup was as follows:

A plat of the field, with all lease lines definitely shown, was reduced to a size to fit the 8½ x 11 loose leaf folder and was in the front of the book. Each building facility and tract of land was numbered. This served to show location and was accompanied by an index which showed the number on the plat and the lessee.

Immediately following the plat and index there was a series of indexed pages corresponding to the numbers and names in the index. These are white cardboard pages 8½ x 11 about the thickness of an ordinary letter folder or the kind of white file card ordinarily used in files. The index tab on each of these showed the number and the name of the lessee. These were in colors, a different color indicating ownership by the city, private industry or the Federal government, with a separate color indicating leases of rights such as landing rights, farming areas and the like.

Mounted on each of these index cards, so that they appeared on the right hand side of the reader, was a photograph of the building or facility covered by the lease. On the left hand side facing the photographs was a typewritten page on heavy bond paper which showed the ownership of the property, the name and legal address of the lessee, the term of the lease including the beginning date

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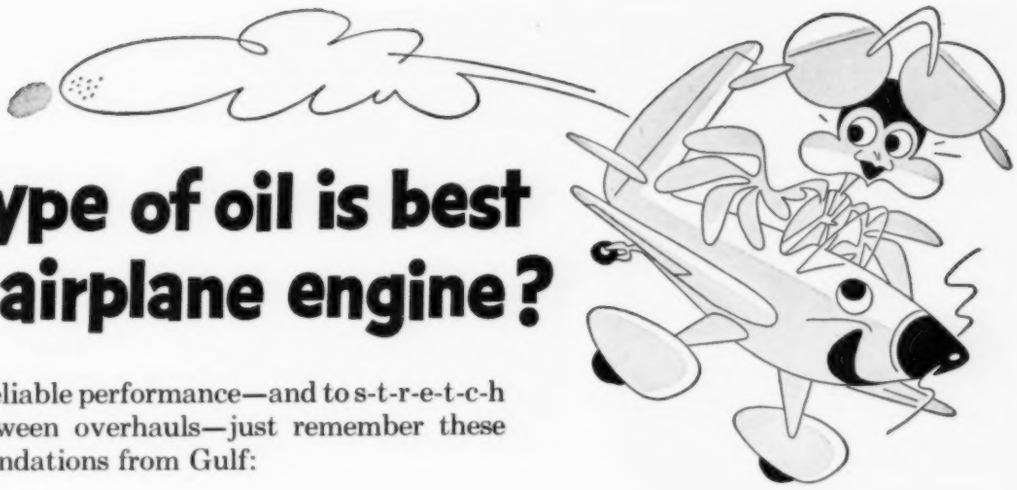

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and the termination date, any options and a brief of the options, rental rates and the terms thereof, square feet of floor space, rental per square foot per annum, cancellation rights, provisions for disposition of the buildings, the termination of the lease if privately-owned, considerations covering maintenance responsibilities, sub-leases, amendments to the original lease and any other particularly pertinent data.

Now that book, when opened with the right hand to any particular tract, building or facility, showed a picture, and in some cases two or three pictures, the largest which was 4 x 5 inches, and without turning any further showed all the details which would normally be necessary and which normally could only be found by reading the lease.

If you consider that one of these books was in the hands of the city manager, another in the hands of the director of public works, and a third in the manager's office, you can see how easy it was when the manager went up to the city hall to talk about a building or lease, for the city manager or the director of public works to pick up his book and open it, look at the picture, and refresh his memory easily so that he could identify the particular facility the manager was talking about. Many times no doubt you have gone to the city hall and started to talk about a particular building and had the mayor or city manager say, "Now which building is that, I can't place it?" Whereas, if he has the information right at his fingertips there is no difficulty in identification.

Each time the terms, conditions, or tenants of a particular building or facility were changed or modified, a new page on bond paper was made to replace the old one and it was the duty of the airport manager's secretary to go by the director's office and the city manager's office, pull the obsolete sheet and replace it with the latest information.

Incidentally, this idea, when we saw it, had been the result of a suggestion along these lines made by L. P. Cookingham then and now city manager in Kansas City.

It took considerable time to accumulate the photographs and digest the pertinent parts of all leases, agreements and contracts but actually it saved a lot of work. Any matter pertaining to any tenant or operator on the airport which came to the city manager's attention could be placed through ready reference to that text.

There are many tools of management which made the job easier. This is one of them. Another is a complete and up-to-date set of as-built plans. Running records through the years of passengers, aircraft movements, air mail poundage, a log of maintenance experience, records of all legislative action affecting the airport—all these take the place of memory which sometimes is faulty. ★ ★ ★

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Flight Safety

(EDITOR'S NOTE: These interesting and valuable notes and views have been briefed from bulletins issued by Flight Safety Foundation, of which Jerome Lederer is director. They are presented with the thought that our readers will find them useful in their flying.)

GCA Comment

ILS and GCA used together are several times safer than using either one alone.

GCA limitations are essential information. These include:

(1) As to GCA reliability, most serious error that can be made is misidentification. It has happened, though rarely—probably no more frequently than wrong signals received from ILS. Its chances will be reduced about to the vanishing point when aircraft are equipped with radar responders such as the airlines plan to use.

(2) GCA controller does not know attitude of the airplane, so if the pilot is already engaged in a corrective maneuver before he is told by GCA that he is off the glide path, the cumulative effect of his own correction plus the correction required to follow the advice from GCA may lead to an over-correction.

(3) Heavy precipitation such as hail, rain, snow can cause the blip on the GCA scope to disappear or to be very difficult to see.

(4) The blip can disappear in blind spots on the scope, which usually occur in small but well defined, often clear areas. Also, radar depends on line-of-sight and can be blocked out

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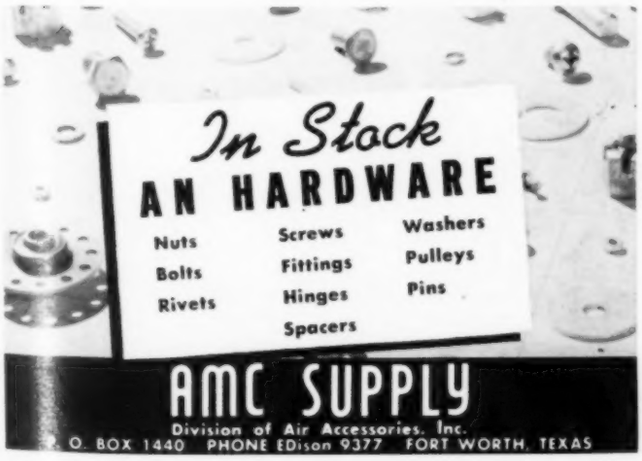

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by obstructions, such as buildings.

(5) Surveillance Radar, on which the aircraft is first identified, gives only azimuth and range—it does not give altitude. However, altitude is given on Precision Radar, which is used when the airplane is 10 miles out, on the standard instrument approach.

These limitations, when combined with the limitations of ILS approaches, show **how very necessary it is to maintain adequate ceiling and visibility minimums.**

There are GCA advantages, however, which outweigh its limitations by far.

(1) It supplements ILS by telling the pilot how far along he is on his approach as well as how far he is to right or left and above or below his glide path. Its measured information supplements the qualitative information of ILS—it can pinpoint the aircraft position at all times. This is of importance, for example, in cases where wind conditions existing at say 1,200 ft. do not exist at 700 ft.—inducing the pilot to come over the inner marker at the incorrect altitude. Lack of precise ILS information on how far off course the aircraft is in reference to the glide path can cause over-corrections on the localizer course, which becomes increasingly sensitive as range diminishes.

(2) GCA can see the obstructions and hazards toward which the aircraft may be heading. In many instances GCA has caught pilots heading for obstructions such as bridges, high smokestacks, gas storage tanks, etc.

(3) GCA confirms what the pilot sees and hears.

GCA eases the burden of making instrument approaches to minimums. Pilots should visit control towers under instrument conditions, watch GCA work and discuss procedures firsthand with operators.

GCA No Poor Man's ILS

GCA has helped many lightplane pilots, a number of whom have sufficient skill and experience plus proper equipment to rely on its advantages. But unless the average lightplane pilot understands GCA limitations, has experience and equipment necessary, GCA is likely to lead him into taking chances which will endanger his safety and that of others.

The average lightplane pilot should understand that GCA is no poor man's substitute for ILS. Consider some of the difficulties:

Before GCA can help him, his airplane (target) must be identified. If it is fabric-covered, it is not easy to identify or follow unless it is wetted. Even some of the all-metal twin-engine aircraft are difficult to pick up from certain aspects.

To be identified, the pilot must give his position or go through prolonged maneuvers which can handicap and delay all other approaching aircraft behind him. The pilot must give his position with considerable accuracy—to avoid being confused with other planes in the same area. An inexperienced pilot, for example, is likely to confuse where he would like to be with where he actually is. This is caused by psychological anticipation, abetted by a false fade leading him to believe he is over the cone when he isn't. This false fade can result from the aircraft's attitude and other familiar causes.

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Aviation Needs a Candidate

It's getting dangerous to stump the country making speeches nowadays. If you happen to hit things just right and produce a stem-winder, they'll start running you for public office. Last month we told you about our trip to Iowa and Minnesota. In the St. Paul audience was a personable young man named Harry R. Chaplin of Plymouth, Wisconsin. Accomplished in many ways, enterprising Harry publishes the bi-weekly Badger Aviation Beacon, a newsy four-page paper devoted to Wisconsin aviation news and personalities ($1 per year—adv.). In his issue of February 21 he proposes we run for president, and goes into a long song and dance as to why civil aviation needs a candidate. We quite agree on the general idea, but for goodness sake, Harry, leave us out of it! After a three months tour of duty in Washington last year doubt if I could even get the dog catcher's job. So please destroy that freshly printed stationery!

Square Peg, Round Hole, Etc.

Speaking of Washington, after completing our assignment, we closed out all details, told everybody good-bye, turned in our key and pass, returned home and settled back to the prosaic job of dealing in unclassified material. A couple of months went by, then out of a clear blue sky, this letter: "Dear Sir: The application for employment which you submitted some time ago to the Department of Commerce is being returned to you since it has not been possible to offer you a position suitable to your training and experience."

Potomac Parade

Admiral Jerry Land of the Air Transport Association insists that there's a new kind of bureaucrat in Washington—the "hydromatic bureaucrat." When a State Department official was asked to define a hydromatic bureaucrat, he replied, "A shiftless SOB."

Confusing the Issue

One year ago in March we wrote the State Department to find out if they had a policy for or against servicing subscription orders from iron curtain countries. Shortly after this query was mailed, Mr. Truman let fly his blast against U. S. slick magazines giving away the nation's secrets. Not being on the newsstands, we didn't see much point in making it easy for the iron curtain boys to get their hands on our journal and were not too keen to service the subscriptions. Months and months went by without even so much as an acknowledgement. After the President's tirade died down we forgot all about the matter. Then one day we received a classic of gobbledigook, going into considerable detail as to the pros and cons of sending technical papers to iron curtain countries, but leaving it up to the publisher. Point is that the holy Department of State is as confused about security as the rest of us.

CAA Loses Bill Berry

Bill Berry, old timer from way back, has resigned from CAA to enter business for himself. As president of Southern Industries, Inc., Bill has taken a lease on the 2,000-acre Stuttgart (Arkansas) Municipal Airport, where he plans to operate several enterprises, including a large rice-farming operation on the field. No one individual in Federal service ever worked so hard for the best interests of civil aviation than brother Bill and we doubt if his shoes in the CAA can ever be adequately filled. His thousands of friends everywhere are bound to send him best wishes in his new undertaking.

Aerial Applicators Study Safety

If you are interested in getting hep on the sad state of affairs as regards the accident rate in agricultural aviation and what should be done about it, write the Aerial Applicators Association, Box 1002, Oklahoma City for a copy of their latest bulletin. The AAA recently sponsored the first aerial applicators aviation safety clinic in history and as a result a hard hitting safety campaign will be launched in an attempt to reduce the terrific attrition rate that threatens to stymie progress in this fast-growing endeavor. Held at the CAA Oklahoma City Aeronautical Center, the group was unanimous in the opinion that industry should police itself and correct the deficiencies with the cooperation of the CAA rather than the imposition of new regulations. That's what AAA intends to do.

Lost and Found

From time to time folks write in wanting to know what's happened to so-and-so. This column will be glad to serve as a missing persons bureau. Recent queries ask for the whereabouts of Syd Nesbitt, formerly of Atlantic Aviation, Teterboro; Buzz Hershfield, one-time sales manager of the old Porterfield company; Tom Moore, formerly with Bellanca.

Best Advice for the Month

Since you cannot refrain from drinking, why not start a saloon in your home? Be the only customer and you will not have to buy a license. Give your wife $55 to buy a case of whiskey. There are 240 snorts in a case. Buy all the drinks from your wife at 60 cents a snort and in 12 days when the case is gone, your wife will have $89 to put in the bank and have $55 to start up in business again.

If you live 10 years and continue to buy all your booze from your wife, and then die in your boots from the shakes, your widow will have $27,085.37 on deposit—enough to bury you respectfully, bring up your children, pay off the mortgage on the house, marry a decent man and forget she ever knew you.—Capital Airlines publication "Between the Lines".

—GEORGE E. HADDAWAY.

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